DOCUMENT RESUME

ED 364 211 IR 016 387

AUTHOR Burmeister, Marsha L.

TITLE Development and Implementation of a Program To Increase Electronic Mail between Fifth and Sixth Grade Students, Parents, and Teachers.

PUB DATE 93

NOTE 151p.; Ed.D. Practicum, Nova University.

PUB TYPE Dissertations/Theses - Practicum Papers (043) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC07 Plus Postage.

DESCRIPTORS Access to Information; Computer Networks; *Electronic Mail; Elementary School Students; Elementary School Teachers; Grade 5; Grade 6; Information Dissemination; Inservice Teacher Education; Intermediate Grades; *Parent Participation; Practicums; Program Development; Program Implementation; *Student Participation; *Teacher Participation; Technological Advancement; *Telecommunications; User Needs (Information); Workshops

ABSTRACT

The problem addressed by the practicum was that students, parents, and teachers in the school district studied did not actively participate in electronic mail opportunities. The goal of the practicum was to increase involvement in electronic mail (e-mail) among fifth and sixth grade students, their teachers, and parents. A telecommunications booklet was developed and distributed to students, parents, and teachers throughout the implementation of the project; and an electronic bulletin board service (BBS) was set up and operated. Introductory workshops were presented to teachers; individual and small group inservice sessions were also presented including interactive online typing sessions. At the end of the implementation period, the BBS had 99 registered users, 64 of whom actively called the system. Of the active callers, 45 were students in fifth or sixth grade, 15 were teachers, and four were parents. A total of 366 e-mail messages were sent with 306 calls logged on the system. Analysis of results indicated that the participants in the project increased in their use of electronic mail. Eleven figures and one table present study findings, and 24 appendixes contain forms and instructions used in the study. (Contains 46 references.) (Author/SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it

☐ Minor changes have been made to improve reproduction quality

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

ED 364 211

Development and Implementation of a Program to Increase Electronic Mail Between Fifth and Sixth Grade Students, Parents, and Teachers

by
Marsha L. Burmeister

Cluster 41

A Practicum II Report Presented to the
Ed.D. Program in Early and Middle Childhood
in Partial Fulfillment of the Requirements
for the Degree of Doctor Of Education

Nova University

1993

IR016387

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Marsha L. Burmeister

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Practicum Approval Sheet

This practicum took place as described.

Verifier: Debbie Rees

Mrs. Debbie Rees
Principal
A. K. Suter Elementary School
Pensacola, Florida

March 22, 1993
Date

This practicum report was submitted by Marsha L. Burmeister under the direction of the adviser listed below. It was submitted to the Ed.D. Program in Early and Middle Childhood and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova University.

Approved:

April 15, 1993
Date of Final
Approval of Report

Georgianna Lowen
Georgianna Lowen, Ed.D.
Adviser

ACKNOWLEDGEMENTS

I wish to thank all of the individuals involved in the implementation of this practicum for working with me to accomplish the goals of my project. To the students, parents, and teachers who called the system go my thanks for your willingness to learn about and experiment with using the computer for telecommunications. A BBS without users is worthless; it was your willingness to be electronic pioneers that made this project successful.

I thank Dr. John DeWitt for his generous and prompt location and loan of the computer used throughout the implementation of this project. The computer was ideal for my purposes and without it this project could not have been implemented.

Anyone who uses computers must have an 'IBM Guru.' Such honors are extended to Tom Whitehurst who formatted and re-formatted the hard drive of the BBS host computer which made the thing run in the first place. My gratitude in this role also goes to Mike Whaley who taught my laptop computer its first tricks and who, after only slight laughter and a little lecture about about the importance of backing up one's system, was able to bring the BBS back to life after it crashed.

Thanks go to Mrs. Debbie Rees, principal of A.K. Suter Elementary School who became a new telecommunicator because of this project. I also thank her for her support of my professional growth and development during my doctoral studies at Nova University.

I thank Nova University for providing me access via telecommunication with friends, mentors, colleagues, acquaintances, instructors and my adviser. I truly appreciate the way that Nova University embraces telecommunication as it helped me place my fingertips on the future through the keyboard.

I also acknowledge the wonderful support of my husband Lee who never fails to remind me that "if it was easy, everyone would do it."

Finally, I would like to express my appreciation to Dr. Georgianna Lowen, my adviser for my Practicum I and this project. Her enthusiastic assistance, professional knowledge, suggestions, and encouragement have been invaluable throughout this project. The items related to peace that were included in the 'Quote of the Day' file on the BBS were placed there in her honor. Peace!

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS iii

TABLE OF CONTENTS iv

LIST OF TABLES v

LIST OF FIGURES vi

Chapter

I INTRODUCTION 1
  Description of Work Setting and Community 1
  The Writer's Role and Responsibilities 4

II STUDY OF THE PROBLEM 10
  Description of the Problem Situation 10
  Evidence of the Problem 12
  Causative Analysis 22
  Review of the Literature 28

III ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS 34
  Goals and Expectations 34
  Expected Outcomes 34
  Measurement of Outcomes 36

IV SOLUTION STRATEGY 40
  Discussion and Evaluation of Possible Solutions 40
  Description of Selected Solutions 44
  Report of Action Taken 46

V RESULTS, DISCUSSION, AND RECOMMENDATIONS 60
  Results 60
  Unexpected Outcomes 68
  Discussion 72
  Recommendations 79
  Dissemination 83

REFERENCES 85

Appendices

A COMPUTER SURVEY 90
B SURVEY COVER LETTER TO TEACHERS 92
C SURVEY DATA TABULATION FORM 94
D THANK YOU LETTER TO PRINCIPALS 96
E EMAIL WORKSHOP EVALUATION FORM 98
F WRITER'S DOCUMENTATION OF EMAIL USE FORM 100
G PRE-PRACTICUM EMAIL SURVEY 102
H POST-PRACTICUM EVALUATION SURVEY 104
I SURVEY OF PARTICIPATING TEACHERS 106
J TELECOMMUNICATIONS BOOKLET 108
K CONTENT OUTLINE OF EMAIL WORKSHOP 117
L BBS MENUS 119
M BBS WELCOME SCREEN 121
N BBS BULLETIN MENU 123
O CONTENTS OF 'QUOTE OF THE DAY' FILE 125
P HOLIDAY BBS BULLETIN EXAMPLE 128
Q OFF LINE BBS USER REGISTRATION FORM 130
R BBS ADVERTISEMENT FLYER 132
S BBS ADVERTISEMENT FLYER COVER LETTER 134
T EVALUATION SURVEY COVER LETTER 136
U BBS REGISTERED USER LIST 138
V NEA INFORMATION REQUEST POSTING 140
W ARTICLE PUBLISHED RE: BBS,TELEPHONE LINE 142

LIST OF TABLES

Table

1 Messages Exchanged on "The Mailbox BBS" 65

LIST OF FIGURES

Figure

1 Population Age Groups in Sample Target Population 3

2 Occupations of Population 3

3 Racial Composition of Neighborhood Sample Population 4

4 Student Response: Do You Have a Computer At Home? 17

5 Student Response Indicating Modem Ownership 17

6 Student Response to Family Members Using Modem 18

7 Home Subscription of Online Computer Services 19

8 Student Survey Response to Use of Home and School Computers 19

9 Student Response to Survey Item Regarding Messages to Friends. 20

10 Student Response to Survey Item Regarding Messages From Friends . . . 21

11 User Contact of Remote Computers Via Modem 62

ABSTRACT

Development and Implementation of a Program to Increase Electronic Mail between Fifth and Sixth Grade Students, Parents, and Teachers. Burmeister, Marsha L., 1993: Practicum Report, Nova University, Ed.D. Program in Early and Middle Childhood. Elementary Education/ Educational Technology/ Computer Bulletin Boards/ Telecommunication/ Computer Literacy/ Computer Peripherals/ Instruction/ Teacher Education

The problem addressed by the practicum was that students, parents, and teachers in the writer's district did not actively participate in electronic mail opportunities. The goal of the practicum was to increase involvement in electronic mail among fifth and sixth grade students, their teachers and parents.

The writer developed a telecommunications booklet which was distributed to students, parents, and teachers throughout the implementation of the project. The writer set up and operated an electronic bulletin board service (BBS). Introductory workshops were presented to teachers; individual and small group inservice sessions were also presented including interactive online typing sessions.

The writer distributed approximately 250 copies of the telecommunication booklet. At the end of the implementation period, the BBS had 99 registered users, 64 of whom actively called the system. Of the active callers, 45 were students in fifth or sixth grade, 15 were teachers, and 4 were parents. A total of 366 email messages were sent with 306 calls logged on the system. Analysis of results indicated that the participants in the project increased in their use of electronic mail.

*****

Permission Statement

As a student in the Ed.D. Program in Early and Middle Childhood, I do (X) do not ( ) give permission to Nova University to distribute copies of this practicum report on request from interested individuals. It is my understanding that Nova University will not charge for this dissemination except to cover the costs of microfiching, handling, and mailing of materials.

March 24, 1993
(date)

Marsha L Burmeister
(signature)

Chapter 1

INTRODUCTION

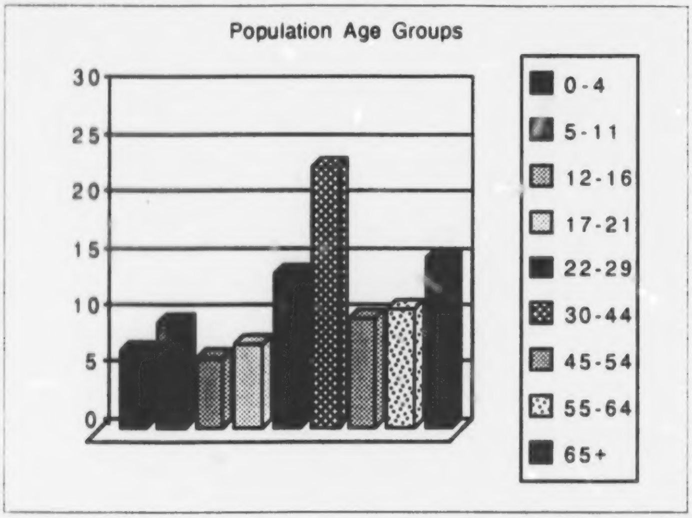
Description of the Setting and Community

The work setting for the writer was a neighborhood elementary school serving students in grades kindergarten through grade 5. The projected enrollment for the 1992-93 school year was approximately 370 students in a southern city with a population of 58,165 (according to 1990 census data). Enrollment of students in grade 5 at the writer's school during the implementation of the practicum was 72 students in 3 self-contained classrooms.

The setting for the practicum was a targeted portion of a school district with a total enrollment of 44,000 students. Students in fifth and sixth grades owning home computers and modems were to be offered the opportunity to participate in the implementation of the practicum.

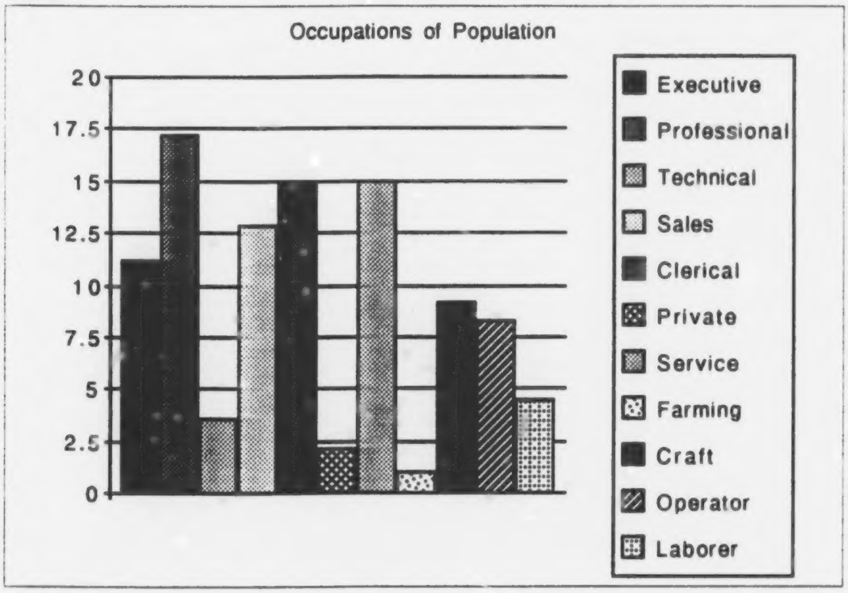
The population of students, teachers, and parents selected to participate in the implementation of the practicum were to be drawn from four schools. These schools were to be selected based on socioeconomic conditions which are sufficient for ownership of computers with modems and telecommunication software, necessary components for participation in the practicum. The fifth grade students were to be selected from 12 classrooms in three elementary schools whose districts are contiguous and are "feeder schools" for the middle school population of students in grade 6 to be included in the implementation of the practicum. A 1990 Neighborhood Demographics report obtained in April, 1992, from CompuServe, an online computer service available by paid subscription, yielded specific data about the neighborhood as defined by zip code shared by three of the four schools selected to participate in the practicum implementation. According to this report, there were 36,509 persons residing in 14,903 households and the average income of the residents was $28,490 per year at the time of data collection. The population is divided into age groups as presented by figure 1.

Figure 1
Population Age Groups in Sample Target Population



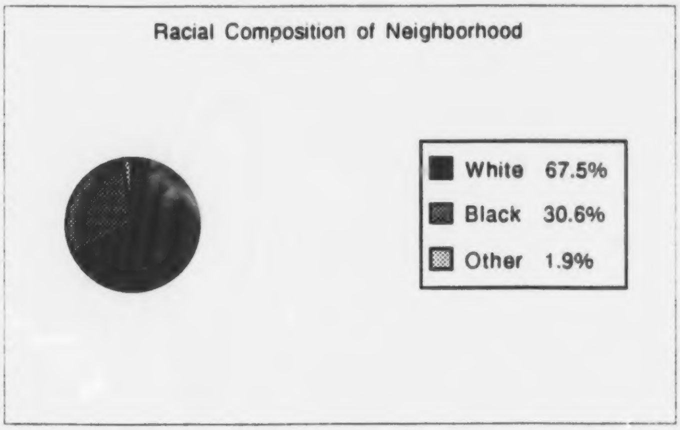
Eleven occupations were identified on the demographic data report for this neighborhood (see Figure 2).

Figure 2
Occupations of Population



The racial composition of the population is summarized by Figure 3.

Figure 3
Racial Composition of Neighborhood Sample Population



Other demographic information about the neighborhood as defined by the zip code, based upon 1990 census data, indicates that 68.2% of the occupied housing units are owned; 31.8% are rented. Household types include single person (25% with 16.3% being single female, 8.7% single male), family (70.7%) and multi-family (4.3%). The average home value is $43,293 and the average rent is $224 per month.

The Writer's Role and Responsibilities

The writer serves as one of the 14 general education classroom teachers of one of the elementary schools targeted for participation in the practicum. The writer is a fifth grade general education classroom teacher and the implementation period of the practicum will mark the twentieth year of the writer's teaching experience in grades one,three, four and five. Extra-curricular responsibilities during the implementation period of the practicum included sponsorship of the school newspaper and the coordination of the business partnerships for the school. Previous responsibilities have included sponsorship of the student council. The writer has been responsible for creation of a 30' by 40' concrete map of the United States in the school courtyard as well as a map of the writer's state dug and poured in concrete and located at the school entrance. The writer willingly shares her talents and expertise throughout the building and the school plant reflects her handiwork.

The writer's successful implementation of her minor practicum through Nova University led to the successful development and implementation of a grade level specific computer literacy curriculum for grades K through 5; each level specified vocabulary, knowledge, and skills. A portion of this work involved individual and group inservice sessions with teachers to enhance teacher computer literacy and to generate a project of the teacher's choice to reflect growth. The writer presented a faculty workshop focusing on classrooms with access to one computer. The grade level specific computer literacy curriculum was adopted by the faculty at the writer's school. Analysis of the data revealed that the participants in the individual inservice sessions were able to use the computer to produce a project and/or explore use of the computer in a new way. The writer's demonstration of the use of an RF modulator to enable use of a 25" color television set as a monitor for whole class lessons led to the purchase and/or placement of this equipment in all classrooms in the writer's school.

The computer literacy of the writer was initiated during graduate course work approximately two years ago. Present classroom use by the writer includes data management, word processing with mail merge and templates, graphics for notices and calendars, and student instruction for prescriptive drill and practice using game formats. Receipt of a district teacher mini-grant enabled the writer to have a private telephone line installed in her classroom. Funded as a "homework line," this telephone line was used during the day to introduce students to the world of telecommunications on a limited basis as the writer added this dimension to her own computer literacy. This telephone line remained in place throughout the implementation of the practicum and was to play a significant role in meeting the goals of this work.

The writer's home computer system is a Macintosh LC with an Apple IIe card which is compatible with the classroom Apple IIe and IIgs systems. The writer also owns an Apple-compatible Laser 128 (used at home prior to the purchase of the Macintosh) which was to be used during the implementation of the practicum. The writer is actively involved in the use of the computer for whole-class instruction. Her personal use of the computer includes publication of newsletters for two organizations. The writer subscribes to two computer membership services (CompuServe and America Online) and has used the Prodigy service. The writer was to participate in a pilot program for teachers sponsored by the National Education Association to evaluate America Online's telecommunication value to teachers.

The writer regularly utilizes telecommunication (email) via Firnmail through the Florida Information Resource Network (FIRN). Firnmail is an email system available to all persons associated with public education in the state of Florida. Another significant email contact used by the writer has been the SouthEastern Regional Vision for Education (SERVE). This bulletin board links persons in Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina. The writer has utilized this bulletin board to discuss educational issues and related topics with several other Nova University students and has found it to be an effective means of communication.

The writer also uses the UNIX system for communication with Nova University faculty and use of its electronic library. Local access is through the Tymnet network. The local computer-access number also enables the writer to access the Library User Information System (LUIS) which provides computer access to the collections of all of the public universities throughout the state of Florida. This system also provides the writer access to the Education Resources Information Clearinghouse (ERIC). The writer is also a member of the National Education Association and as such has access to their national bulletin board. Due to the amount of online computer time, the writer has had a second telephone line installed at her home. This line is used only for telecommunication via computer and modem.

The writer's qualifications for this role are a B.A. in elementary education and an M.A. in elementary education. She has also earned an M.Ed. in educational leadership and holds state certification in this area enabling her to be in training for the position of elementary school principal and a member of the Principal Pool of Administrative Candidates for her school district. She has been a recipient of monies from the local school district teacher mini-grant program receiving approximately $1,000 for five grants during the past four years. One of her grants provided the first RF modulator in her school and was the basis of changes made in her school via her minor practicum to enable teachers to use a larger-screen television set as a computer monitor for whole-class activities. She was a member of the school team for application for accreditation and has served in an advisory capacity to the School Improvement Committee and the Onward to Excellence school team, providing technical assistance in data analysis and presentation using the computer. She is a member of a local Macintosh user group. Her education and experience have provided a good working knowledge of the role of the classroom teacher, professional and personal computer literacy, and insight into the application of computer literacy to enhance the educational program and teacher productivity. During the implementation phase of her minor practicum, she was chosen by her peers as the school's Teacher of the Year and was a district semi-finalist in the district level of this statewide teacher recognition program. The writer's minor practicum (Burmeister, 1992) was accepted for inclusion in the ERIC database. During the implementation of the practicum, the writer published an article about the use of a computer linked to a large screen television in the one computer social studies classroom (Burmeister, 1992). The writer was nominated for the "Outstanding Research In Education Award" of the Northwest Florida Chapter #1312 of Phi Delta Kappa.

Chapter II

STUDY OF THE PROBLEM

Description of the Problem Situation

The problem addressed by the practicum was that students, parents, and teachers in the writer's district did not actively participate in electronic mail opportunities. The present education reform movement stresses the implementation of technology in today's classrooms as well as the importance of linking home and school as a mutual student support system. Additionally, citizens live in a society which Naisbitt (1984) refers to as the information age. Access to data and speed of communication is an important element in education to be used by the citizens of tomorrow.

Increasing numbers of students, parents, and teachers have access to the hardware and software available for telecommunication. The home computer industry has become a major participant in the marketplace. Development of new technologies in central processing units (CPUs) including the downsizing of equipment utilizing better memory chips for faster working computers and the packaging of personal computers (PCs) bundled with software directed to home use has fostered the purchase of PCs at unprecedented rates. Magazines such as the

November, 1991, issue of Good Housekeeping include advertisement for personal computers, while a photo display about living spaces in Better Homes and Gardens includes placement of the home computer in the family art studio (Jackson, 1992). The June 22, 1992 issue of Time magazine contains a dozen pages of advertisements for computers and software by IBM, Compaq, and Microsoft. Additionally, modems are offered bundled with online computer services such as Prodigy and can be purchased in national discount stores such as Wal Mart or K Mart which not only stock computers but internal and external modems as well. The Wal Mart contacted by the writer indicated that the external modems were out of stock temporarily due to sales. Another discount chain with locations in the writer's city is Sam's Wholesale Warehouse; computers and modems as well as software constitute a significant portion of sales; these items are placed at the store entrance so all shoppers encounter these projects as they begin shopping.

Telecommunication may yield benefits of communication in terms of information, language arts skills and interpersonal relationship skills. CompuServe, America Online, and Prodigy online computer subscription services each provide numerous research opportunities which include online encyclopedias, dictionaries, and data bases as well as forums to seek answers to questions.

Language arts skills may also be fostered through the use of telecommunication. The entire process of email involves writing and reading. Many programs, such as Write to Read, Reading Recovery, and other remedial programs are experience-based and link progress to the use of reading and writing skills.

Interpersonal relationships can be fostered and developed via telecommunication. As the current educational reform movement moves toward placing students in a global and multicultural community, the use of electronic mail can do much to further human understanding, foster peace, facilitate communication among various groups and develop new friendships via the electronically delivered word.

In brief, students, parents, and teachers do not electronically communicate although appropriate hardware and software is available for this purpose.

Evidence of the Problem

Evidence of the problem was supported by an informal telephone survey, use of a written survey instrument (Appendix A) with fourth and fifth graders, a review of standard foundations of education text books, and an interview with thirty five teachers. In a 1992 informal telephone survey of teachers of children in several elementary schools within the district, eight teachers in three schools related that they believed their students were capable of more advanced communication skills but did not exhibit these skills. The teachers spoke of the current emphasis of the writing process approach to the teaching of writing and the related use of the keyboard to foster publication of student writings. For elementary school students, the publication of writing means the sharing of their work with another person. The most common ways of publishing student writing include word processing and book-making, the mailing of written letters, contribution to student newspapers or literary magazines, or the posting of completed writings in classroom or hallway displays or development of student writing folders and/or journals. The teachers with whom the writer conversed identified word processing as an important part of present writing programs and as a source of great potential for the sharing of student thoughts via the electronically transmitted word. The teachers indicated that the biggest drawback to the implementation of such a program in the classroom is the lack of access to a telephone line. Although the importance of computer literacy was recognized by the teachers with whom the writer spoke, the current emphasis of instruction is that of word processing. Because there is no outlet for instruction in telecommunication throughout district classrooms, it is not a part of the instructional program. The writer did speak with a teacher involved in a program for at-risk students; the funding level for a limited number of classrooms throughout the district made it possible for this teacher to install a telephone line and to access the Prodigy online service from his classroom. This reflects the experience and interest of this teacher who chose to allocate a portion of his budget specifically for telecommunications. He reported an enthusiastic response from his students and believes that this is a very valuable educational experience for his students with tremendous potential for positive communication experiences and informational gains.

A survey (see Appendix A) of students in the fourth and fifth grades in three schools targeted by the writer sought data about the number of homes with computers and modems, the uses of computers by students both at home and at school, the use of the modem, and the interest in students to send and receive messages from friends using the computer and the modem. The survey was developed by the writer and titled "Wanted: Information about kids and computers!"

The survey was distributed during the final week of the 1991-92 school year. Although the timing of the distribution of the survey placed it during a very hectic instructional period, the writer felt that the necessity to obtain hard data before the student population exited the school system for the summer justified attempting to gather data at this time. Furthermore, the fifth grade population under consideration for participation during the implementation of the practicum was, at the time of the survey, centrally located at nearby elementary schools. This population will be scattered to a variety of middle schools, public and private, when school resumes in the fall. Therefore, it was convenient to gather data before these groups of children dispersed.

Surveys were sent to 26 classrooms of fourth and fifth grade students (soon to be fifth and sixth grade students) located in three elementary schools. Each building principal was contacted by telephone prior to the distribution of the surveys to obtain permission. Permission was granted; the enrollment for each classroom was determined and 26 sets of surveys were duplicated, placed in envelopes, and hand delivered to the schools.

A cover letter to the classroom teacher was included with each set of surveys (see Appendix B). This letter explained the nature of the survey, the directions for administering the instrument, and the procedure for return of the surveys to the writer via the school district courier system. The envelope that contained the surveys was pre-addressed to the writer to be used for the return of the completed surveys. The cover letter indicated appreciation of the teachers' effort to complete the survey during the extremely busy culmination of the school year. The writer attached two quarters to the cover letter and invited participants to purchase a soft drink using these coins.

Completed surveys were returned from 23 of the 26 classrooms in receipt of surveys. One set of surveys was returned during the teacher work day period following the close of schools; the teacher indicated regret for not having time to complete the surveys and also included return of the cover letter and the quarters. The number of returned surveys completed was 619.

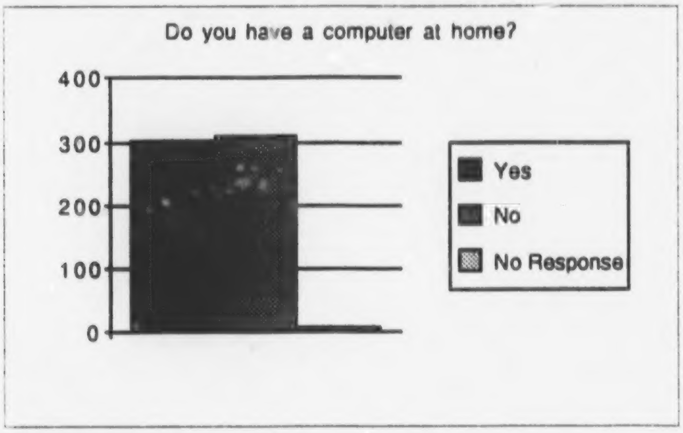
The survey data was tabulated using a form designed by the writer (see Appendix C). This tally sheet utilized a four-column format to record student responses that paralleled the survey instrument. Seven categories of answers were tabulated. These included home computer ownership, possession of a modem, use of the computer at home and school, use of the modem by students and that of the parent, participation in online computer services, information about interest in computer messaging, and the current grade level of the participants completing the survey.

For further study, the surveys were kept separate by classroom (and school, when possible) and are identifiable by grade level. The data tabulation for the purposes of baseline data for the evidence of the problem combined all survey responses.

A letter expressing the writer's thanks was sent to the two building principals who facilitated the completion of the surveys (Appendix D). This letter referred to the writer's previous work in the area of computer literacy during implementation of the minor practicum experience at Nova University. The writer also included an overview of the practicum plan via the concept paper.

Following collation of the data by the writer, an analysis was made. The total number of students indicating that they have a computer at home was 303. Responses in the "no" category numbered 309. Seven students did not mark a response. The data is presented in Figure 4.

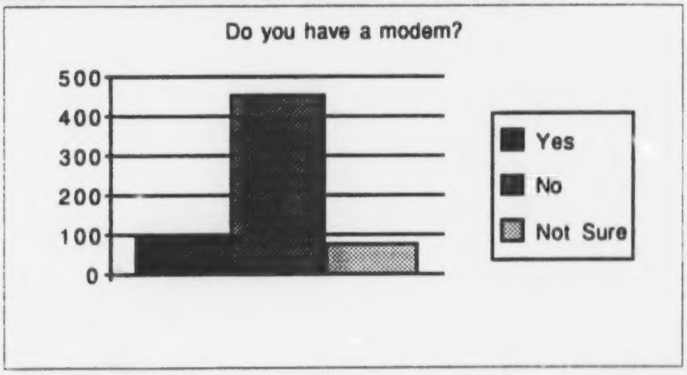
Figure 4
Student Response: Do you have a computer at home?



Note: n= 619 student responses to survey

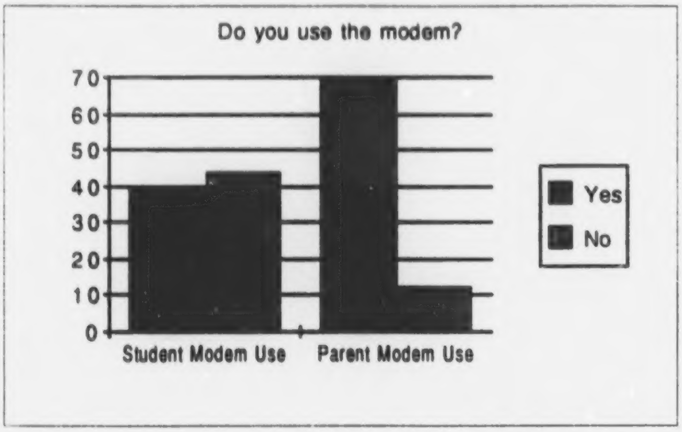
A total of 91 students indicated that they have a modem; 76 students with a computer at home indicated that they were "not sure" about having a modem for their computer. This question was a significant portion of the survey because it was directed at identification of the number of students owning a modem which is the gateway to telecommunications. The data is presented by Figure 5.

Figure 5
Student Response Indicating Modem Ownership



The survey of fourth and fifth grade with modems (Appendix A) revealed that only 40 of the 91 students with modems use the modem. The results of the survey in this area are presented in Figure 6, which indicates that parents use the modem more than students.

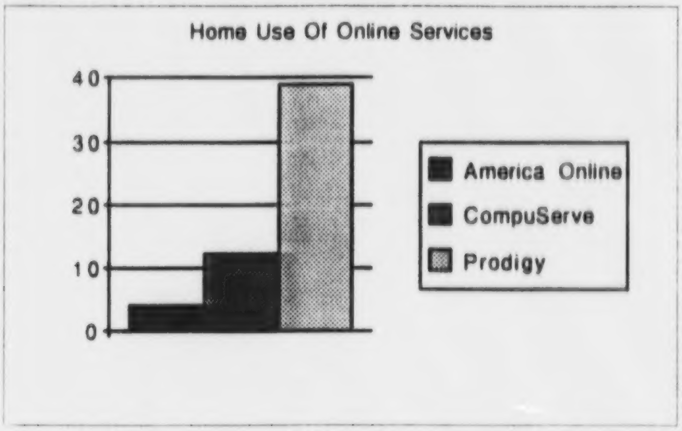
Figure 6
Student Response to Family Members Using Modem



Survey results also provided an opportunity for students owning modems as an accessory to their home computer to indicate family subscription to the online computer services of America Online, CompuServe and Prodigy. Subscription is summarized by Figure 7.

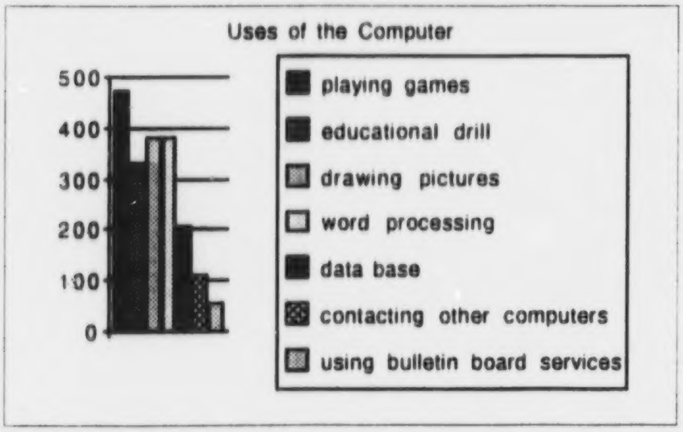
Figure 7

Home Subscription to Online Computer Services



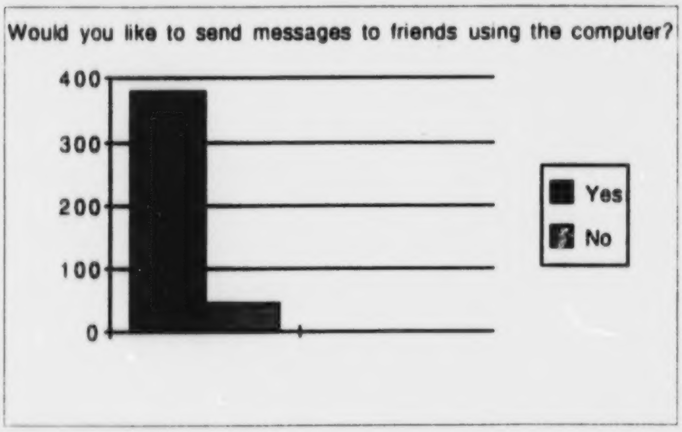
The survey indicated that uses of the computer, both at home and at school, included the following: playing games, educational drill, drawing pictures (graphics), word processing (typing) data base (getting information from files) contacting other computers, using bulletin board services, and other ways. The survey results are presented by Figure 8.

Figure 8
Student Survey Response to Use of Home and School Computers



One survey item was directed to sending and receiving messages from friends. A total of 419 students responded to the survey items related to sending and receiving messages from friends using the computer. The data indicates that students would enjoy sending messages to friends using the computer. Survey response in this area is presented by Figure 9.

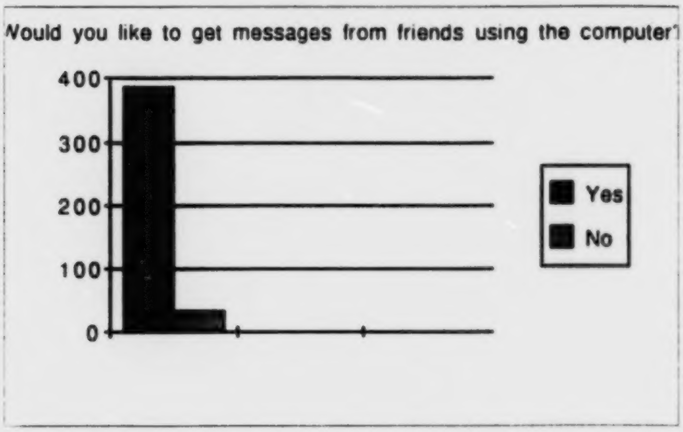
Figure 9
Student Response to Survey Item Regarding Messages to Friends



The students surveyed also indicated their interest in receiving messages from friends via the computer. These results paralleled the previous question about sending messages; the survey question results are presented in Figure 10.

Figure 10

Student Response to Survey Item Regarding Messages From Friends



In a review of standard foundations of education textbooks used to instruct prospective teachers of elementary school students, there was only a minimal amount of information given about the use of computers in education and this was limited to drill and practice software and application strategies. None of the texts discussed use of telecommunication via computer/modem in the language arts program of students.

In informal interviews with thirty five teachers, all of the teachers had used a computer within the past four weeks; only one teacher had used a computer with a modem for telecommunications beyond a preliminary instruction period provided by the the media specialist as an introduction to FIRN. The emphasis upon placement of computers in classrooms throughout the writer's district has facilitated the use of computers by teachers due to their availability. It did not surprise the writer that all of the teachers had used a computer during the latter part of the school year. The writer has worked with teachers extensively in the area of computer literacy (Burmeister, 1991), and found that teachers primarily use the computer for student drill and practice. The use of the computer for telecommunications was fostered at the writer's school by the media specialist who held individual inservice sessions with teachers to access the Florida Information Resource Network [FIRN]. Media specialists throughout the district were directed and encouraged to facilitate faculty participation in the email and reference capabilities of this system. For this reason, all teachers at the writer's school were signed up as users; the writer received email from each teacher as he/she participated in the inservices. Since that initial message, the writer did not receive mail from these teachers.

Causative Analysis

It is the writer's belief that there were 6 causes for the problem. The causes include education coupled with experience, cost, lack of connection to real persons, unfamiliarity with the capabilities of equipment, access to information, and marketing of online services.

Electronic mail opportunities are not utilized because students, parents, and teachers are not familiar with the availability and procedures related to the use of email. The traditional forms of communication are the use of the written letter or voice telephone messaging. Electronic mail is a new concept to the general public. The process of the computer dialing the telephone and linking to another system is a very abstract concept. The initial experience is one of surprise, wonder and disbelief, each of which has been personally experienced by the writer and witnessed as colleagues had their initial encounter with FIRN. Connection to a remote computer brings a new element to computer use; the user is no longer the only source of input. Linked computers give the user feedback and respond to their specific actions (or lack of action by disconnecting). To the uninitiated, this process can be threatening, intimidating, or frustrating. The user must recognize and utilize appropriate keyboard responses and their cues to successfully email; these are related to the software being used by the BBS as well as the personal telecommunications software of the user. Software varies in the level of user friendliness, the type of commands, the speed at which they operate, and the features offered to the user. The media attention to computer viruses also adds a dimension of fear to the act of connection to another computer. A lack of understanding of the process by which computer viruses are transmitted can prevent the use of the modem. These factors combine to be a cause for students, parents, and teachers to avoid use of email opportunities.

Although online services exist, user fees may be prohibitive from student use and long-term exploration. Online services vary in their billing procedures and rates. The type of service may be a determining factor. For example, some online computer services make additional charges for specific reports such as access to particular data bases. The demographic data obtained by the writer from CompuServe was subject to an additional charge. In an article introducing the General Electric Network for Information Exchange, otherwise known as GEnie, Olsen (1992) identifies their three-tiered pricing program which is designed to foster system use during nights and weekends. Olsen (1992) stresses the importance of choices of access time and services related to monthly bills. Some choices will lead to a "monthly bill of about $5 or one of many times that amount calculated on an hourly basis" (Olsen, 1992, p. 17). GEnie has Basic* services and Value$ services; the * and $ symbols are displayed for users and can impact significantly upon the telecommunication bill. System response time can add to the bill; sometimes the user must merely wait for the system to respond. This was the writer's experience with Prodigy; although this service has a flat monthly charge ($12.95 plus applicable state and local taxes), considerable time was spent online waiting for the system to respond. Thirty messages per month are included in this fee. Another issue related to cost is the potential charge for long distance calls to online services. Although these services offer an extensive list of local access telephone lines, a long distance call may be necessary. These online computer services offer a multitude of services and areas to explore; much time can be spent perusing various files. The time of day and the length of time online can have financial consequences and therefore limit the use of the email capabilities of these systems. Furthermore, the use of online computer services for electronic mail requires that the persons with whom one wishes to correspond must be a member of the particular online service which requires not one financial commitment, but two persons with a paid subscription.

Although long-distance correspondence can be a positive and pleasurable experience, the writer held that the fifth and sixth grade students targeted as the student participants are at a developmental stage which lends itself to email with students who have an element of connection and commonality. Developmentally, these students are leaving the Piaget's concrete operations stage and entering the realm of abstract thought in the formal-operational period (Fischer & Lazerson, 1984). The abstract nature of email to a remote location may not have the meaning and conceptual orientation that correspondence with a student in the writer's district, which has the potential for confirming voice telephone communication and discussion of community activities and concerns within the realm of the student's world.

Because of the rapid growth of the home computer industry, families may now have equipment with as yet unexplored features such as the modem. Personal computers are frequently sold as a package; software and peripherals such as drives, printers, and modems can be included. These packages are touted for their completeness; designed for one-time purchasers, the systems contain a complete home computer set up. Mass marketing can mean the purchase of a system with a modem. Because there are so many uses of the new computer to explore, the use of the modem is often postponed indefinitely.

Electronic mail experiences require that the user know whom to dial and the appropriate access number. In some cases, specific software must be obtained for use with the bulletin board. America Online and the Prodigy services have their own software which is included in their membership start-up kit. CompuServe is accessed by a variety of telecommunication software programs or software may be obtained from CompuServe to assist the user. GEnie is best accessed through software specifically designed for the system; the program is called Aladdin (Olsen, 1992). Although appropriate software may be obtained without charge, the process is far from instant. All services require that potential users contact them by phone or in writing to request sign-up instructions, obtain access numbers, an initial password and a user identification (ID) number. The access to online computer services requires billing procedures which are linked to the use of a credit card such as Visa or Mastercard. These hurdles to online access combine to prevent the use of email opportunities by fifth and sixth grade students, their parents and teachers.

Finally, online subscription services do not cater to the preteen and teen market. Although family membership is encouraged, the services of these systems are directed to adu interests such as travel, data related to the fluctuation of the stock market, current news items and online shopping opportunities. Prodigy has given attention to this area; the writer's survey (see Appendix A) indicated that Prodigy has the greatest number of subscribers of the children responding to the question about online computer services (see Figure 7). Prodigy offers advice to teens, a bulletin board, educational products, educational software, and online publications such as Weekly Reader and Highlights. However, the survey indicated that it is the parents who are using the modem (see Figure 6).

Review of the Literature

Review of the literature gives evidence of the importance of knowledge and use of electronic mail opportunities and reasons to foster online experiences for students. Telecommunications is viewed as a significant part of the technological future of today's students.

There is a fascination about electronics (Williams & Mitchell, 1987) and the advent of the home computer can make it possible for children and adults to "gab" back and forth as when an earlier generation discovered the telephone (Williams & Mitchell, 1987, p. 12). Jokes and stories, plans, dreams, and thoughts are exchanged daily by children using the telephone; the same process can be a pleasurable telecommunications activity.

We live in an increasingly high-tech, information oriented society and students must be prepared for life in a computer-oriented world (Caissy, 1987). We are becoming more dependent upon computers in every facet of our life. Use of telecommunication technology can be found in "small business, manufacturing, commerce, broadcasting, religion, transportation, banking, tourism, entertainment, health and defense" (Weinstein & Roschwalb, 1990, p. 115) And the computer will be one of the most important tools students will use to navigate their "shaping of the world that they will be leading" (Caissy, 1987, p. 34).

McCade (1988) believes that "students have a definite need to experience online communications" (p.13) and that realistic situations are preferable to simulations. A personal computer with a modem can "give the average person a very powerful communications and information tool" (McCade, 1988, p. 12). Lake (1988) views the computer and modem as tools to "channel student ideas to real and widespread audiences" (p. 83) as they reach out with the written word. Telecommunications provides students with timely responses to their written words (Lake, 1988). Word processing is the basic process for telecommunication and is the means toward an end: moving beyond "the barriers of time and distance that interfere with human interactions" (Lake, 1988, p. 85). Word-processing has tremendous instructional power, more so than any computer use kindergarten through college (Madian, 1992).

Wigley (1988) points out that the telecommunicator's initial realization is that other computers are far away from the user and that they cost money to use even with a local-dialed access number; budgeting is required for basic services and additional fees may be added for technical/ special information services. If the number is not a local call or an 800 number, there will be additional telephone charges in addition to charges for the online subscription. Use becomes a matter of being able to call other computers economically (Wigley, 1988).

Although Tucker (1987) defined a "small, small world" with 30 leading online services with more than 1.4 million subscribers (p.56), now Compuserve alone boasts a business directory containing name, address, and telephone numbers for more than 10 million US and Canadian businesses (Branstetter, 1992). Online computer systems available for subscription is a growth industry (Tucker, 1987) with a wide range of services including online newspapers and magazines, shopping, access to encyclopedias, as well as special interest files for a wide variety of interests (Branstetter, 1992).

Sullivan (1989) sees electronic mail as an integral part of modern organizational communication. Electronic mail is a communication technology that can greatly increase messaging efficiency (Sullivan, 1989). Kelly and Zuckerman (1989) narrowly define telecommunication as "data transmission between computers via telephone lines" (p. 86). Email is the "simplest and most common form of computer-based telecommunication" (Kelly & Zuckerman, 1989, p. 87). Electronic mail also has the advantage of reaching the addressee without delay; unlike a telephone call which may not be received, electronic mail is available for reading at the convenience of the writer. Routine reading of email ensures that communication occurs (Kelly & Zuckerman, 1989).

Children may view the computer as a pencil (Buschbaum, 1992) and telecommunications activities can enable participants to "see themselves as readers, writers, and researchers" (Crowley, 1989, p. 23). "Electronic messaging is a powerful and productive educational tool" (Crowley, 1989, p. 23). Telecommunications can provide a technological exchange of messages as well as social studies reports, book reports, poetry, short stories, math problems, and scientific data (Crowley, 1989).

As technology moves into the home, the need is growing to educate the whole family on technology literacy and to involve parents with their children in their home technologies (November, 1992). Schools need to develop plans to help parents become personally involved with home technologies, and the time for this is now (November, 1992).

Computers have opened the door to the modern era of electronic mail by their very existence; there are now thousands of PC-based bulletin board systems in North America (Caswell, 1988). Electronic mail meshes with the Florida goals related to learning environment which states that technology should be used to improve student performance; email provides hands-on opportunities and active involvement for learners (Shapley, 1992). Florida's Blueprint 2000, the bill for educational reform and accountability passed in the 1991 Legislative session, mandates direction toward school improvement. Educational technology will play a significant role in this endeavor (Shapley, 1992).

Current national educational reform movements direct our schools to the next century and include "the wired classroom" (Watson, 1990, p. 109). Watson (1990) states that "slowly, cautiously, through the commitment of individual teachers, the

American classroom is going on-line" (p. 110). A computer and a modem can bring the Information Age into the classroom. A "new generation of information systems can transform schooling in America" (Grunwald, 1990, p. 113). Grunwald predicts that these services will continue to gain success and use and will change education in 6 ways: an increase of parental involvement, schools will electronically communicate with parents, the teacher's role will change to one of guidance throughout telecommunication experiences, the educational setting will be greatly expanded, students will be empowered, and lifelong learning will be facilitated (Grunwald, 1990).

Wishnietsky (1991) states that students should be encouraged to use electronic mail and that elementary students enjoy calling each other. Areas for sharing could include mathematics, English, science, social studies, music, foreign language, and homework (Wishnietsky, 1991).

Rickelman and Henk (1990) state that "perhaps no other area holds a greater potential for use in schools of the future than telecommunications" (p. 418). With a potential for a worldwide network that would allow any two computer users on earth to share information via satellite, teachers must assume the responsibility for education of students in the area of telecommunications (Rickelman & Henk, 1990). Education in this area will foster cooperative learning without the limits posed by distance, the ability to send and receive messages from other students in the world, and to search for and access almost any type of information. The role of the teacher must be to create opportunities for students to use computers for organizing, saving and accessing information (Rickelman & Henk, 1990).

Smith (1985) identifies telecommunications as an opportunity for teenagers to experience what will later become one of their main management tools: the computer. While using email as a discussion forum for such topics as programming tips,global politics, philosophy and light-hearted dialogs, the teens become "acclimated to the technology they will be using in their working future" (Smith, 1985, p. 29).

Finally, Beazley (1989) cites telecommunications as an element of whole language teaching and a tool for enhancing reading enjoyment and competence. Using the computer with a modem brings new possibilities for development and extension of language skills and abilities. An added dimension of reality is brought to the learning situation.

Therefore, there are many reasons found in the literature which identify the importance of knowledge and the use of electronic mail opportunities. In historical perspective, it can be said that

> The agricultural age was based on plows and the animals that pulled them; the industrial age, on engines and the fuels that fed them. The information age we are now creating will be based on computers and the networks that interconnect them (Dertouzos, 1991, p. 62).

Chapter III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Goals and Expectations

The following goal and expected outcomes were projected for the practicum. The general goal of the practicum was to increase involvement in electronic mail among fifth and sixth grade students, their teachers and parents. The writer visualized the practicum as an opportunity to facilitate a new facet of computer literacy in her district.

Expected Outcomes

The following objectives were expected outcomes for this practicum. These conditions were expected to prevail for the population participating in the implementation of the practicum and were designed to meet the writer's goal of facilitating solution strategies.

1. Students will exhibit advanced communication skills by sending electronic mail messages: one to a friend, and that a fifth

grader will ask a sixth grader a question about middle school and receive an answer. The writer feels that the use of electronic mail is a hands-on learning experience which, because of its basis as a real way to communicate, must have genuine experience as an outcome. The question about middle school portion of the outcome is hoped by the writer to be a meaningful reason for electronic interchange by the students.

2. Students, parents, and teachers will indicate increased knowledge about the use of telecommunication in terms of equipment, vocabulary, and procedures. Because knowledge of specific procedures, equipment, and vocabulary is necessary to participate in electronic mail, the writer hopes to clarify the concept and use of electronic mail.

3. Parents and students will utilize the modem to access information about the school and its activities. This outcome addresses the importance of school / home communication and the potential for sharing information electronically. The writer wishes to provide meaningful information for the practicum participants. School policies, programs, a calendar of events, reminders, procedures, or requests are seen as potential postings for email access.

4. Teachers will utilize electronic mail by sending and receiving messages from students and/ or parents and supplying information to be posted as bulletins for receipt electronically by students and parents participating in the implementation of the

practicum. Posting of homework notices, assignments, reminders, or trivia facts are seen as potential email messaging content for teachers participating in the practicum.

5. Teachers of fifth and sixth graders will send electronic messages to their students participating in the practicum. This outcome differs from Outcome 4 because these messages are to be personal messages sent to a specific student. The messages related to this outcome will be personal and for private reading by the recipient. The writer hopes that these teachers may choose to share the process of email with their students and colleagues.

6. Students in fifth and sixth grades will send electronic mail to establish an electronic relationship with students in another school outside the writer's district for the purpose of academic learning.

Measurement of Outcomes

The measurement of outcomes of the practicum was to encompass several instruments and strategies. Each goal of the practicum had a specific measurement tool and a standard of achievement.

Outcome #1. The outcome that students will exhibit advanced communication skills by sending electronic mail messages was to evaluated by monitoring of the use of electronic mail. The data collected was expected to indicate the use of advanced communication skills of participants in the implementation portion of the practicum; a documentation form was to be used to measure this outcome (see Appendix F). The writer was to use this form to log the use of electronic mail via the computer set up for electronic mail. The standard of achievement was to be that 25 of 50 of the participants in the practicum implementation were to successfully e-mail to a friend and a teacher.

Outcome #2. The outcome that students, parents and teachers will indicate increased knowledge about the use of telecommunications in terms of equipment, vocabulary, and procedures was to be evaluated by using a survey instrument which was to be completed by students, parents, and teachers to collect data about telecommunication knowledge (see Appendix G). Data was to be collected at the beginning and end of the implementation period of the practicum. The expected standard of achievement was that 40 of 50 completed surveys would indicate an increase in the knowledge of telecommunications in terms of equipment, vocabulary, and procedures.

Outcome #3. The measurement of the outcome that parents and students will utilize the modem to access information about the school and activities was to be evaluated by an on-line survey. The online survey was to be available to gather data about the use of the local bulletin board for the purpose of obtaining information about the school and activities via electronic mail bulletins. The expected standard of achievement was that 40 of 50 of the participants in the implementation of the practicum would indicate receipt of knowledge about school and activities electronically.

Outcome #4. The outcome that teachers will utilize electronic mail by sending and receiving messages from students and supplying information to be posted for receipt electronically by students and parents participating in the implementation of the practicum was to be measured by monitoring the use of electronic mail. A survey of teachers (see Appendix I) was to be distributed either on-line or via paper mail. It was anticipated that 15 of the 25 teachers potentially participating in the practicum implementation would indicate that messages were sent and received and that they supplied information for electronic transmittal to students and parents.

Outcome #5. The outcome that teachers of fifth and sixth graders will send electronic messages to their students participating in the practicum was to be measured by monitoring of electronic mail using the email documentation form completed by the writer (see Appendix F). The expected standard of achievement was that the data collected would find that 15 of the 25 teachers participating in the implementation phase of the practicum would have sent electronic mail to students and have received a reply.

Outcome #6. Finally, the outcome that students participating in the implementation of the practicum will establish an electronic relationship with students outside of the writer's district was to be measured by the examination of a student portfolio maintained by the sysop and/or the classroom teacher. Samples of student letters and/or reports generated through the use of electronic communication would be included in the portfolio. The standard of achievement for this outcome was to be that 25 of the 50 participants in the practicum implementation would have letters or other documents to and from students in a distant district.

Chapter IV

SOLUTION STRATEGY

Discussion and Evaluation of Possible Solutions

The problem addressed by the practicum was that students, parents, and teachers in the writer's district did not electronically communicate although appropriate hardware and software was available for this purpose. Building upon the information presented in the Review of the Literature, several components of a solution strategy were identified. The literature spoke to solution strategies including implementation of an electronic mail program, use of electronic bulletin boards, and electronic pen pals.

When Norris (1990) implemented an electronic mail program in her fifth grade classroom, results indicated an increased level of achievement in students' communication and writing skills. Norris' program involved the use of a word processing program used to write messages which were then emailed via modem to a school approximately 25 miles away. Writing topics were generated from international news programs. The active audience component of this program was viewed as a significant factor in the positive outcome.

Carpenter (1992) states that the use of local bulletin boards and the nationwide network of FidoNets offer the greatest telecommunications opportunities to classroom teachers. Access to such systems can provide information from databases, sending and receiving electronic mail, and posting of news on specialized electronic bulletin boards. Systems that provide messages that can be read and responded to by a variety of email users are more successful; electronic pen-pals have a limited interest span (Carpenter, 1992).

Electronic communication can be contrived or simulated; reality is experienced when children communicate with real people or deal with real issues or solve real technical problems in communications (Upitis, 1990). Some electronic mail exercises can be merely "electronic representations of traditional paper and pencil curriculum activities" (Upitis, 1990, p. 233). Upitis discusses two electronic mail projects between two distant schools. In the first situation, students were to write a series of round robin stories [different parts of the same story written by different children]. The author reports that the stories were written but the excitement of the project revolved upon the remote nature of the two groups writing the stories. The second project focused upon electronic pen-pals. Technical problems led to communication difficulties and messaging between the parties did not regularly occur. Notably, what did happen was that the children did email to other persons; these persons were known to the children. They communicated with someone who had a real role to play in the children's realm of experience.

A wide spectrum of activities utilizing telecommunications includes electronic mail, bulletin boards, conferences, real-time conferencing, data bases, tutoring, access to experts, networks, and online instruction (Kurshan, 1990). There has been rapid growth of telecommunication networks for higher education; networks such as BITNET, NSFNET, and Internet are available; BITNET supports student email and data sharing via its Kidsnet conference (Kurshan, 1990). Computer access to a wide variety of networks are available; Kurshan (1990) lists 30 international telecommunications projects including PeaceNet, EcoNet, and FrEDmail. Each network has its particular educational features; some have significant cost factors.

Telecommunications Opportunities for Gifted Learners (TOGL) is a Florida state-funded project that enables district populations of gifted students access to telecommunications which extends research capabilities, improves communications, and provides resources such as data bases (Ellington, 1991). Access is through Tymnet and this system provides the fundamental telecommunications activity, electronic mail. Email by students using this system can be of a social nature but may also include requests for assistance with school projects (Ellington, 1991). This system also provides real-time chatting, which is the visual equivalent of talking on the telephone.

The "Computer Pals Across the World Project" was an application of the use of computers as tools in the language classroom to enhance reading enjoyment and competence and provided a real learning environment to develop and extend language skills (Beazley, 1989). This program created a "global classroom" (Beazley, 1989, p. 598) involving writing to electronic pen-pals in another country. Email activities included electronic letter writing, the sharing of written reports, and a poetry exchange. Additionally, the students exchanged written dialog about social issues such as world peace and relationships. The final component of the program was the exchange of written myths and legends specific to their particular culture. An outcome of this project was the aspect of "tele-editing" (Beazley, 1989, p. 603), providing written feedback to the writer to clarify the written work. The author saw this program as a source of motivation, reading, and cooperative learning as well as a way to improve reading and writing skills.

Albright (1989) traces the origin of the bulletin board system (BBS) and the "bulletin boarding of America" (p. 205). The origin of the BBS can be traced back to the late 1970's in Chicago, Illinois by two friends who became the first 'sysops' or 'systems operators;' since that time the BBS phenomenon has spread to thousands of computer enthusiasts (Albright, 1989). Unlike some other email networks, messages can be addressed to "All." These messages are a springboard for the free exchange of comments, opinions, advice, and information. The establishment of an electronic bulletin board system (BBS) as a solution strategy is suggested by Crowley (1989), McCade (1988), Wigley (1988), and Williams & Mitchell (1987).

Description of Selected Solutions

The implementation of the practicum utilized several strategies selected as solutions to the problem that students, parents, and teachers did not electronically communicate although appropriate hardware and software was available for this purpose. Prior to implementation, a specific population of students with home computers with modems was to be identified for fifth and sixth grade students attending the schools targeted for the implementation of the practicum. Additionally, the writer was to contact the principals of the participating schools and the fifth and sixth grade teachers as well as the Parent Teacher Association (PTA) at each school. This contact was to orient these persons to the work of the writer and hopefully establish a cooperative relationship which would continue throughout the implementation. The writer was to emphasize the opportunity that this work was to offer for effective communication between members of the school family. It was hoped that these parties would be involved early on in the submission of information items to be posted in the form of bulletins on the BBS. Finally, various applications and participation in local BBSs were to be researched with input from systems operators (SYSOPs). Considerable research related to appropriate bulletin board system software was to be done related to ease of use and crash-resistance of the programs and appropriate BBS software was to be obtained by the writer.

The writer was to produce a telecommunications booklet which was to define the vocabulary and procedures related to electronic mail (email) for the beginning user (see Appendix J). The writer was to direct this booklet primarily to the student reader but was to include tips and strategies for the more advanced user. This booklet was to be distributed to all participants in the writer's practicum; the concept of email was to be explained and developed. A glossary of terms was to be included as well as a discussion of manners associated with email and a list of symbols used as a communications shorthand by email users.

The writer was to set up a local BBS for the purpose of email and the sharing of bulletins between the members of the targeted population of fifth and sixth grade students, their parents, and teachers. The writer was to serve as the SYSOP. The anticipated platform for the BBS was an Apple //e compatible Laser 128 with two disk drives, a color monitor, and a printer. This equipment was owned by the writer. The ultimate choice of computer platform for the BBS was to be determined by the availability and related costs of appropriate software for the system.

The writer was to present an introductory email workshop which would serve to orient potential BBS users (students, parents, and teachers) to the use of email. The writer anticipated several presentations of this workshop at various locations throughout the district for the convenience of the practicum participants. The use of an RF modulator and a larger screen television screen for whole-class demonstration of the use of the features of the BBS was anticipated. An evaluation of the workshop presentation was to be made using a form (see Appendix E). A program was to be provided outlining the content of the email workshop (see Appendix K).

The writer was to explore and encourage the use of networks available to link students in distant classrooms for the purpose of academic learnings such as research projects, information or data gathering, or cooperative learning.

Report of Action Taken

During the first month of implementation, the writer researched material for use in the telecommunications booklet. The writer consulted with other teachers using telecommunication via the National Education Association (NEA) bulletin board to discuss appropriate information to be included in the booklet. The writer also accessed various file areas via America Online, doing a search using "BBS" as a keyword item. Discussions and postings of information related to telecommunications etiquette and the experience of the writer prompted inclusion of a section about this topic to be included in the booklet. A list of telecommunications vocabulary terms was developed from the writer's experience and telecommunication. The glossaries of Albright (1989) and Caswell (1988) were also consulted. The booklet progressed through the writing stages of draft, editing and revision and was in final form for duplication at the end of the first month (see Appendix J). One hundred copies of the booklet were made for distribution.

Also during the first month of implementation, the writer decided to dedicate the second telephone line in her home for use as the BBS. Because the use of electronic mail was anticipated to take place primarily during evenings and weekends, the location of the telephone at the writer's home was seen as an intelligent choice so that the system could be monitored while in use and this number was used for publication in the telecommunications booklet.

Also during the first month, the writer addressed the selection and formatting of appropriate software. The writer originally intended to use a Laser 128 computer which is Apple //e compatible. Two software programs were identified; one was a public domain program shared by an acquaintance through correspondence on the NEA BBS. Public domain software is software to which the author has given up all rights and which may be freely appropriated by anyone for any purpose. The other BBS software was included as a part of a telecommunication program called ProTerm, designed for the Apple //e platform. The writer decided not to use these programs because they required a 3.5 disk drive which was not part of the writer's computer system, the necessity of system set up by the system operator, and the reported susceptibility of these programs to crash.

The writer then examined use of the Apple Macintosh as a BBS platform for the implementation of the practicum. Through telecommunications using the GEnie network, the writer communicated with a Canadian individual familiar with a BBS software program called "First Class 2.0™" published by Softarc. This program had much to offer as a BBS platform but meant a financial investment of $199 at the time of implementation. The other Macintosh software examined by the writer for this platform was TeleFinder™ published by Spider Island Software. The writer telecommunicated with Spider Island personnel via American Online and received and examined a demonstration disk of the TeleFinder™ group edition software.

Also during the first month of implementation of the practicum, the writer presented an email workshop to the district schools in receipt of technology grants. The content of this workshop is presented in Appendix K, and included a live demonstration of the use of email.

The selection of appropriate BBS software continued throughout the second month of implementation. The writer used the demonstration disk of the TeleFinder™ BBS software and explored an existing local BBS run by the writer's Macintosh User Group which features this software. The writer decided against using this software because it requires the user to obtain and use a copy of the program to access the BBS. The writer sought to emphasize the role of the modem as a universal translator to enable all computer users to telecommunicate without compatibility issues. The writer also at this point chose to abandon the concept of using her Macintosh as the platform for the BBS because of the writer's dependence upon this system to do other work.

At this point in the implementation of the practicum, the writer purchased an IBM PS2 Model L40SX laptop computer with internal modem and a Cannon Bubble Jet 10e printer. The writer began an extensive personal program to become familiar with the DOS system environment. The writer read extensively the work of Gookin (1991) and Gookin and Rathbone (1992).

The writer examined local and national bulletin boards in terms of the software used for these systems. Two pieces of software were identified: RBBS-PC™ (public domain software) and Wildcat!™, published by Mustang™ Software. The writer ordered a copy of RBBS-PC™ from the Capitol Area PC User Group, Inc. for

$16.00 which covered disks, postage, and handling. RBBS-PC is designed to run on any IBM-compatible PC running either PC-DOS or MS-DOS Version 2.1 or greater. The name of the program is the acronym for "Remote Bulletin Board System for the IBM Personal Computer." The software enables a caller to remotely access the PC running the program, leave or review messages, and transfer files to and from the caller's PC using a variety of transfer protocols. It can support from one to 36 simultaneous telephone lines (users) and will communicate from 300 to 14,400 bps. It also offers a variety of security levels. The writer was very familiar with this software from access experience on the NEA bulletin board and that of the United States Department of Education (OERI) BBS. The writer appreciated its user-friendly menus, bulletin capability, and conferencing areas as well as its potential for expansion to more than a one node (telephone line) system.

The other program identified by the writer during the second month of the implementation of the practicum was Wildcat!™ by Mustang Software. The writer found that a free demonstration copy of this program was available as a free download from America Online or the program could be purchased from several shareware vendors. The writer chose to order a copy of Wildcat! from a shareware catalog. Shareware is software that is available for a nominal fee (usually covering the cost of computer diskettes and postage). After trying out the software and deciding to use it, the user is to pay a fee to the software author to register the software or purchase a registered copy for programs that the shareware buyer uses. The honor system applies. Registered software is supported by the author/company in terms of technological support. The writer talked to several people locally and via telecommunication who were familiar with Wildcat! The writer was impressed with the fact that installation and set up of Wildcat! was reported as very easy; the program was designed to set up its own files. The writer also learned that Mustang Software, Inc., fully supports the shareware version which it calls its "Test Drive" version. The writer was able to connect directly with Mustang Software via America Online. Since the writer was a regular user of America Online as well as a participant in a pilot program using the system for the NEA during the implementation of the practicum, this access was seen as another point in favor of selecting Wildcat! as the BBS software.

Also during the second month of implementation, the writer realized that a DOS-based machine would be necessary for running the BBS. The writer read newspaper advertisements in search of a suitable machine. The writer also met with the school district Director of Grants and Research and discussed the BBS project. The Director indicated that there was a potential for borrowing a machine for the project and that the writer would be contacted if and when such a computer was found.

During the third month of the implementation of the practicum, the writer examined RBBS-PC and Wildcat! Because the writer did not have access to a computer and printer capable of printing out the "documentation" or direction files of each of these pieces of software, the writer consulted with a person at the local junior college library computer lab who was familiar with these programs. The RBBS-PC documentation file was too large for this assistant to print for the writer. She also had had experience with setting up this program to run and indicated that it was a difficult task requiring numerous hours to get all of the files set up and that it also required a significant amount of DOS-based computer literacy. Her recommendation was to use the Test Drive of Wildcat! which had self-extracting files requiring significantly less set up by the system operator. The Wildcat! program was installed on a computer in the lab and then the documentation file was printed. This took over 90 minutes to print on paper that the writer furnished. When the file had been printed, it was discovered that the printer produced 156 pages of the 185 pages in the documentation file. The writer did not have Chapter 9 which included the appendices and the Index but presumed that there was sufficient information printed to suffice at this point.

At the end of the second month of the implementation period, the writer was contacted by the Director of Grants and Research for the school district. Several computers had been donated to a district middle school and the writer was offered one of these machines. The writer was issued an IBM PS2 Model 25 computer with a 20 MEG hard drive which was stamped with appropriate district serial numbers which served to identify the computer as part of the inventory of the school district.

The writer also procured a damaged DOS-based machine for the students in her classroom to examine internally. Provided by a parent who learned of the writer's project during a school open house presentation, the parent also supplied a new mouse and the driver software with a 25 pin to 9 pin adaptor for use with the computer the writer was seeking.

The beginning of the third month continued the writer's computer literacy education in the DOS domain. The writer contacted a colleague who had experience with IBM machines and was instructed in the processes required to load a mouse driver and install programs. The writer was not successful starting the Wildcat! program after the software was installed; a check of the disk revealed 'bad chains' which the writer was told indicated that the hard drive was in need of reformatting. This was accomplished by the middle of the third month. The writer then dealt with the acquisition of an appropriate modem for this computer.

The IBM PS2 Model 25 did not have a port for the external Hayes-compatible modem which the writer owned and had planned to use for the BBS. The writer therefore purchased an internal modem manufactured by Identity Systems Technology Inc.® The next task was installation of the modem. The salesclerk at the warehouse store where the writer purchased the modem agreed to install it. Unfortunately, this person was not able to gain entry into the computer cabinet. The writer contacted several computer stores and the local IBM office; the all charges quoted to install the internal modem were in excess of $105. The IBM representative indicated that the installation of a modem was a relatively easy task and directed the writer to place the computer monitor-face down and to remove screws until the machine opened up. This the writer did, after extensive reading of the directions included with the internal modem. The writer learned that actually installation of an internal modem is really a matter of opening up the computer and literally plugging in a circuit board (the internal modem) into a plug (slot) inside the computer cabinet. Removal of a metal plate on the back of the computer enabled the telephone jack to be accessible so the modem could be attached to a telephone outlet.

To test the modem, the writer installed a copy of Procomm, a shareware program that the writer ordered with the Wildcat! software. This program was successfully used with the computer to access the writer's account on the Unix system at Nova University as well as the NEA BBS.

During the fourth month, the writer thoroughly read directions about the software and used the MakeWild program that is a part of the Wildcat! software. This program within a program sets up all of the features of the BBS including files, menus, and screens (what the caller sees on the computer monitor). There are many choices to be made and information must be entered as the system operator works through 18 set up screens called 'frames.' When the MakeWild program was fully configured, three menus were set up: main, message, and reports for the sysop (see Appendix L). Upon completion of this work the writer attempted to start the Wildcat! program. Starting the Test Drive version via the cat.bat file, the writer was unable to run the program because of a "Carrier detected. Attempting to lower carrier " message which repeatedly appeared. The writer emailed via America Online to Mustang Software Inc, (MSI) with this information and data related to the use of a mouse. Within 24 hours this reply was received (transcription of email message):

> Your modem most likely has the carrier forced. Type AT&C1&W while in Procomm's terminal mode, your modem should say OK. Now go into MakeWild, make sure you don't have &F anywhere in there, include &C1 in your re-init string on line 7, and try it again.
>
> It is possible that you have a hardware conflict though. Is that a bus mouse or serial mouse. What IRQ is the mouse using?
>
> --Steve Crippen
> MSI

Fortunately the writer understood what this meant and complied with the directions in the first paragraph of the message; Wildcat! was online and ready for its first caller.

Also during the fourth month, the writer worked with other files in the BBS program. These included the creation of the welcome screen (see Appendix M), a bulletin menu (see Appendix

N), and the "Quote of the Day" file which presents to each caller an individual message which the writer selected from personal words of wisdom as well as proverbs listed as components of cultural literacy (Hirsch, 1992). This file is created by the system operator and sequentially displays a quote to each user when they log on to the system. Each log on incrementally moves the system to display the next item in the file. A list of the items in the "Quote of the Day" file is presented in Appendix O. Another area of the BBS set up by the writer is the Birthday BBS file which displays special greetings to the user when they log on to the system on their birthday. The BBS was fully operational and ready to take its first caller on the 26th day of the fourth month.

During the fifth month, the writer contacted teachers and principals at schools selected for participating in the implementation of the practicum. The writer worked to introduce students, teachers, and parents to The Mailbox BBS. Copies of the telecommunications booklet were distributed. Individual workshop sessions were held with several students and teachers to begin development of a group of registered users for the BBS. A pre-practicum survey was made of all new users as they were introduced to the system (see Appendix G). The writer monitored the use of the system and updated a bulletin to reflect a holiday theme (see Appendix P).

Also during the fifth month of implementation, the writer purchased the registered version of the Wildcat! software. The writer installed this version on her IBM laptop to examine and use it before installing it as an upgrade on the computer hosting The Mailbox BBS. The writer evaluated the registered version and decided to remain with the supported Test Drive® version throughout the remainder of the implementation program because of differences in menus and features that the writer felt might impact the use of the system by persons who had learned to successfully access the program previously. Additionally, the Wildcat! shareware version was fully operational and the writer saw no need to make changes unnecessarily.

During the sixth month, the writer continued to monitor the use of email on the BBS, make back ups of the Wildcat! files, and to write and respond to email on the system. The writer duplicated additional copies of the telecommunications booklet (see Appendix J) and continued to inservice individual students, teachers and parents to the use of The Mailbox BBS. The writer developed an off-line user registration form (see Appendix Q). This form was provided in response to a teacher who wished to register several students without use of class time to complete the new user questionnaire.

While monitoring the use of the system, the writer engaged in online real-time (live interactive) chat with several users applying a feature of the Wildcat! software which allows the system operator (sysop) to type to an online user and for the user to type to the sysop. This feature of the BBS turned the telecommunication session into a talk session via typewriting between both persons involved. The Wildcat! software places the control of the chat session into the hands of the sysop. The writer taught users to type '-0-' as the appropriate signal to indicate that the other chat participant was to type. This feature of the Wildcat! software was utilized throughout the remainder of the implementation of the practicum.

During the seventh month of implementation, the writer continued to write and respond to email on the system, make back ups of system files, update bulletins, and answer system pages. The writer continued to add registered users to The Mailbox BBS and developed a flyer for posting at schools (see Appendix R) with an accompanying cover letter (see Appendix S). This material was sent to principals at thirteen district elementary and middle schools with ten copies of the telecommunication booklet (see Appendix J). This material was also shared by the writer with the district director of the Homebound Instruction Program, the district Director of Instructional Technology, and the district Director of Grants and Research. The writer also received a request from a district math specialist for copies of the telecommunication booklet. The writer also met with the district Superintendent of Schools and shared the nature of the project and copies of the telecommunication booklet.

During the eighth month of implementation the writer continued to monitor the use of electronic mail by the registered users on the bulletin board, maintain recent system back up, and to increase the user data base, write and respond to email, answer system pages, and engage in 'real time' chat with new users and when the sysop deemed appropriate. The writer worked with fifth grade students at the writer's school to engage in telecommunication with students in South Carolina.

Following the eighth month of implementation, an evaluation of the practicum was made. The writer originally intended to evaluate the system using an online survey instrument but because this file was not accessible online, paper instruments were used and addressed and stamped envelopes were provided for return of completed surveys to the writer. A survey instrument was sent to participating teachers and parents (see Appendix I). An evaluation survey was sent to all registered users who had logged on to the system (see Appendix H). A cover letter was included with the surveys (see Appendix T) and all users received a copy of the complete current user list (see Appendix U).

Chapter V

RESULTS, DISCUSSION, AND RECOMMENDATIONS

Results

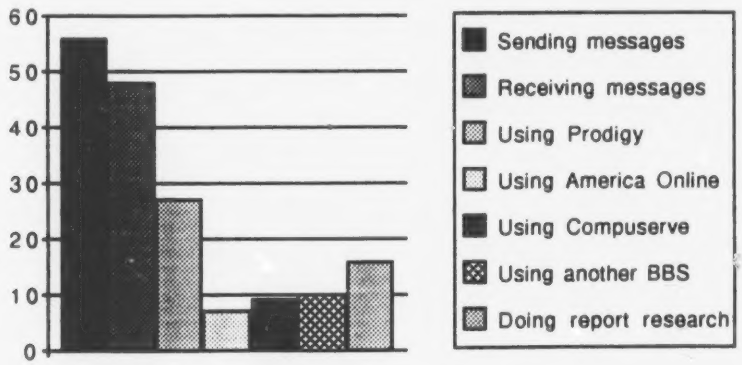
The problem addressed by the practicum was that students, parents, and teachers in the writer's district did not electronically communicate although appropriate hardware and software was available for this purpose. Preliminary strategies included identifying a population of students with home computers with modems and research done related to appropriate bulletin board system software, and the writing and duplication of a telecommunications booklet. Solution strategies included creation of a local computer BBS with the writer assuming the role of system operator (sysop), development of a population of registered users of the BBS, and distribution of the telecommunications booklet. Other planned components of the solution were introductory email workshops and the exploration and encouragement of the use of networks to link students for distance learning.

The writer's BBS was called "The Mailbox," a title chosen to reflect the purpose and focus of the BBS. At the end of the practicum implementation period, The Mailbox BBS had 99 registered users, 64 of whom actively called the system. Of the 64 active callers, 45 were students in fifth or sixth grade, 15 were teachers, and 4 were parents. A total of 366 email messages were sent using the system and the BBS logged a total of 306 calls. Approximately 250 copies of the telecommunication booklet (see Appendix J) were distributed to students, parents, and teachers in thirteen schools and several administrative offices in the writer's district.

Outcome #1. The first expected outcome of the practicum was the demonstrated use of advanced telecommunication skills by students. Data was collected by observing the BBS on a nightly and weekend basis, monitoring, printing and analyzing the activity log and scanning the messages list database on the BBS. These features of the Wildcat! software combined to record every action taken by persons accessing the system. An analysis of the 366 messages left on the system found that 96 messages were written from students to other students. A total of 41 messages were sent from students to teachers using the system. Registered users demonstrated advanced telecommunication skills as they successfully accessed the system, navigated between the main and message menus on the BBS, read and sent messages, deleted messages after reading, accessed bulletins, and logged out appropriately. The projected standard of achievement for this outcome was that 25 of 50 participants in the practicum implementation would successfully e-mail to a friend and a teacher. Analysis of the activity log indicated that 64 of the 64 active callers sent one or more e-mail messages.

The BBS evaluation survey (see Appendix I) distributed at the conclusion of the implementation period also provided results in support of the successful achievement of this goal. Persons who accessed the system were asked to indicate all of the ways they have made contact with other computers using the modem. The results are presented in the following figure.

Figure 11
User Contact of Remote Computers Via Modem



Survey respondents also indicated purposes of other contact of remote computers. These included sharing of information about networking, chatting, and getting library material. This outcome was successfully achieved.

Outcome #2. The second outcome of the practicum was that students, parents, and teachers would indicate increased knowledge abut the use of telecommunication in terms of equipment, vocabulary, and procedures. The measurement of this outcome was through a pre-practicum implementation survey (see Appendix G) and a post-practicum implementation survey (see Appendix H). The pre-implementation survey was given to all users prior to their introduction to the BBS. Of the 98 registered users, an analysis of the surveys indicated that 11 participants had prior experience using electronic mail. Following the implementation of the practicum, "The Mailbox BBS Evaluation Survey" (see Appendix H) was distributed to all active users of the BBS; 56 of the 64 surveys were returned. The anticipated standard of achievement was that 40 of 50 completed surveys would indicate an increase in the knowledge of telecommunications in terms of equipment, vocabulary, and procedures. Analysis of the surveys found that 50 of the 56 survey respondents indicated that they learned something from using the BBS; six participants responded "no." The written comments included by survey respondents who indicated an increase in knowledge included using new ways to use the computer, learning how to write to someone without using paper, and the ability send notes back and forth. Eleven respondents mentioned an increase in their ability to type on the computer keyboard. One student indicated that, because of her experience with The Mailbox, her family advanced in skills and became CompuServe users. One parent indicated that the BBS was a totally new experience. This outcome was successfully achieved.

Outcome #3. The third outcome of the practicum was that parents and students were to utilize the modem to access information about the school and its activities. The measurement of this outcome was by the monitoring of the reading of the bulletins posted on the BBS relating to school activities. The expected standard of achievement for this outcome was that 40 of 50 participants in the practicum would indicate receipt of information about school and activities electronically. An examination of the activity log of the BBS indicates that the bulletins relating to school activities and information were read by 28 users a total of 47 times. The newsletter file was accessed 41 times. The data collected indicated that 42 of 56 users obtained information electronically. The analysis of activity related to online files and the surveys supports the successful achievement of this outcome.

Outcome #4. The fourth outcome of the practicum was that teachers were to utilize electronic mail by sending and receiving messages from students,and/or parents and supplying information to be posted as bulletins for receipt electronically by students and parents participating in the implementation of the practicum. This outcome was measured by a survey (see Appendix I) which was distributed to teachers and parents at the end of the implementation period. The projected standard of acheivement for this outcome was that 15 of 25 teachers participating in the implementation phase of the practicum would have sent and received electronic mail. Fourteen of the 15 surveys were returned; 14 of the 14 teachers indicated that they had sent messages to students using the BBS. Eleven of the 14 respondents indicated that they had received email messages from students.

A second measure of this outcome was an analysis of the electronic mail activity in the message base. A complete analysis of the 366 messages electronically posted is presented in the following table.

Table 1
Messages Exchanged on "The Mailbox BBS"

Message sent from:	Message sent to:	number:
student	teacher/parent	41
student	student	96
teacher	student	117
teacher	teacher	44
parent	teacher	9
'mailroom'	various users	28
various users	all users	31

Note: n = 366 messages sent using the BBS

The 'mailroom' is a feature of the Wildcat! BBS software which gives users the opportunity to receive a message stating when the message they sent was received. Another feature of the software is the capacity of the system to allow users to mail public messages to all users. These messages are available to all persons who log onto the system and can be the basis for open discussions as users read the thoughts of others and respond if they wish to do so.

Outcome #5. The fifth outcome of the practicum was that teachers of fifth and sixth grade students would send electronic messages to their students participating in the practicum. Very closely linked to the previous outcome, this outcome was measured by monitoring of the activity log and by scanning the messages left on the system. The results supporting successful achievement of this outcome are presented in Table 1 above. The projected standard of achievement for this outcome was that 15 of 25 participating teachers would have sent electronic mail to students and received a reply. All 14 of the survey instruments returned (see Appendix I) indicated that the respondents sent email messages to students. Eleven of the 14 respondents indicated that they received email messages from students using the BBS system. Also related to this outcome was the response of teachers to five items. Using a Likert scale, all 14 of the responding teachers indicated that they enjoyed the use of the computer for the purpose of email by choosing the ‘strongly agree’ response. The survey also indicated that 13 of the responding teachers plan to continue to use email as a means of communication while one respondent indicated that they may not due to lack of access to the computer, modem, and telephone line. All respondents indicated that electronic communication is useful to the classroom teacher. In response to an item related to the inclusion of electronic mail as a part of the district computer literacy curriculum, 13 teachers indicated that it should be part of the curriculum. Twelve teachers returning the survey disagree with a statement related to little value in the use of email while two teachers somewhat disagreed. The survey results related to this outcome indicate that it was successfully achieved.

Outcome #6. The final outcome of the practicum was that students in fifth and sixth grades were to send electronic mail to establish an electronic relationship with students in another school outside the writer's district for the purpose of academic learning. This outcome was to be measured by the use of a portfolio. The writer sought a suitable location to serve as a distribution site for distant telecommunication that would be at no cost to the users either for the telephone call from the home of participants to obtain pen pals as well as free of charge for the use of the remote system. As this component of the practicum was to be implemented, the BBS chosen would not accept new users because of funding cuts. Therefore it became impossible to implement this component as originally intended. The writer, using her classroom telephone line, was able to access two electronic bulletin boards via toll-free telephone calls. Since only the teacher was allowed to be a registered user, the writer developed a whole class approach to telecommunication lessons. Using the RF modulator and large screen television in place through the writer's previous practicum work (Burmeister, 1992), the 23 fifth grade students in the writer's classroom were able to experience telecommunication with students in South Carolina, Iowa, and also with a teacher who had taught in Peru. The students enjoyed the interpersonal exchange between individual students and classes; topics included the weather, the fact that the writer's students do not have recess as part of their instructional day, the content of curriculum and study areas, and special events and class trips. With adjustments necessary due to the unforeseen circumstances of the funding cut experienced by the national BBS chosen by the writer, this outcome was successfully met within reasonable limits.

Unexpected Outcomes

The Wildcat! software featured interactive capabilities that added unexpected experiences to the use of the BBS by both callers and the writer. When a caller is using the BBS, the host computer monitor displays a bright band of information at the bottom of the screen indicating the name of the caller, the time they called, the age of the caller, the access baud rate, and the amount of time they have remaining to use the system on that date. The writer set the system parameters to allow 45 minutes per day online. The remainder of the monitor provides a duplication of the screen seen by the caller. In this way, system use can be monitored as it occurs as well as via the activity log which is recorded as a file by the software. The writer spent many hours throughout the implementation of the practicum watching callers access the system. The first time the writer activated the "chat" mode was when a caller that the writer knew was online and appeared to be uncertain about the procedure to send a message. The writer initiated the chat feature; this activates the keyboard of the host computer and typing from the sysop appears on the caller's screen and on the monitor of the host computer. The writer was thus able to do an interactive individual inservice workshop with the user, answer questions, and provide direction to the user. After typing exchanges, the sysop returned the caller to use of the BBS and was able to continue monitoring the progress of the caller. This chat feature also led to several interactive sessions with parents and students; while engaged in a typing session with a student it was often learned that the parent was watching or was typing for the student. Thus, the use of the BBS became a group activity which was unexpected by both the writer and the system users.

The use of the chat feature lent an element of immediacy to the use of the computer for telecommunication. In this mode, the writer typed with a student concerned about his lost dog. A parent monitoring a typing session as her daughter used the system read that the writer would be traveling to another city four hours from home and excitedly asked if the writer could bring back a bundle of cards, letters, and a videotape (arriving at a nearby airport) from the student's grandmother in South America. Because of this telecommunication experience, the writer was able to deliver the messages from the grandmother the same day that they arrived in the United States.

A second feature of the Wildcat! BBS software is the capability of callers to "page the sysop." The software allows the sysop to set up hours during which they may be paged, much as one establishes office hours. When a caller pages the system operator, the host computer beeps; the sysop can answer the page using a function key. The page command may be initiated at any time and sysop response is dependent upon being within hearing range of the beep emitted by the host computer. This is a visual equivalent of making a telephone call. The writer was paged several times throughout the implementation of the practicum. The writer was asked by a student to come to his elementary school and demonstrate the BBS. A discussion was also held with a student seeking to upload and download games to share with friends. An interactive discussion related to the legality of sharing software occurred online.

The use of the interactive chat mode on the BBS by both the system operator and callers was an unexpected outcome that enhanced the experience of system use, provided an opportunity to experience the speed at which users could read and input information, and impacted the writer's recommendations for future projects.

A second unexpected outcome was the use of the BBS to enable the writer to telecommunicate with students while being absent from the classroom. The writer attended a week-long technology conference held in a major city 400 miles away. The writer taught several of her fifth grade students the procedures necessary to access The Mailbox BBS including booting the classroom Apple IIgs computer, using the telecommunications software to dial the system, to check and respond to email, log out of the system, and shut down the classroom computer. Students learned to do this without requiring supervision by the substitute teacher. During the five days that the writer attended the conference, students in the writer's classroom received messages from their teacher and responded to their email. This unexpected outcome enabled students to remain in contact with their teacher, to utilize the BBS for convenient communication over distances, and enhance their learning experience while a substitute teacher was present.

A third unexpected outcome of the practicum was that the writer's work was a part of an article published during the final month of the implementation of the practicum in a national journal

(Dismuke, 1993). Throughout the implementation of the practicum, the writer relied heavily upon electronic mail for the selection and support of the BBS software. Mustang™ is the publisher of the BBS software and they are accessible via America Online (AOL). The writer was participating in a pilot program examining the use of AOL and was also active in reading messages posted in the 'Mustang' area related to the software. In exploring and using AOL, the writer used telecommunication to respond to a request for information (see Appendix V). The writer was contacted and interviewed by telephone; the article discussed the writer's BBS operation and classroom telephone line (see Appendix W) related to removing barriers that isolate the classroom.

Discussion

The writer thoroughly enjoyed the implementation phase of this practicum. It was truly a convoluted adventure as the writer experienced a variety of problems which eventually turned out to be important learning opportunities to enhance personal computer literacy. The location of the host computer at the writer's home meant that this was a practicum that was truly a part of daily life. The whir of the computer became a non-stop sound that was missed when it was silent. The computer was left online 24 hours per day, every day, except during thunderstorms when the writer was available to take it off-line.

Many learning opportunities were provided for the writer throughout the implementation of the practicum. These were really major steps in the personal computer literacy of the writer and included learning about the DOS system and effectively using it to modify and create files for use on the BBS. The welcome screen (see Appendix M) and the contents of the Quote for the Day file (see Appendix O) were created using the DOS editor. The writer views the entire BBS as a tremendously worthwhile experience which brought frustration, delight, unhappiness, amazement, gloom, exhilaration, tears, and private applause.

The modem is the key ingredient linking the host computer to the telephone line which enables anyone from anywhere using any computer to access the BBS. The writer purchased an internal modem because the donated/loaned computer did not have a port to accommodate an external modem. It was a very frustrating experience to find that the persons at the store where the modem was purchased could not get the computer opened up in order to install the modem as a courtesy to the inexperienced writer. As an alternative, the writer contacted the authorized local IBM service agent who indicated that installation would cost $105.00. Since writer was using the teacher approach to the funding of this project (Latham and Fifield, 1993), the writer decided against this solution. The service representative did indicate that removing screws makes the machine open. The writer opened the computer and, following the directions included with internal modem, successfully installed the modem. The writer emphasizes that advancement of personal computer literacy is limitless as is the capability of persons to learn new things as situations arise.

The Wildcat! BBS software included a screen-saver feature which prevented burn-in of images left on the screen. The Wildcat! screen saver displayed a box which incrementally moved on the screen. The text in the box stated "The screen has been cleared to prevent burn-in." The screen-saver also listed the name of the last caller and the 'from' data, such as "John Doe from Some Elementary School." This feature of the software was a major part of the writer's life with the BBS. From the first moment in the morning to the last look before retiring for the night (and later), this screen was read by the writer as she monitored the project. During the sixth month of implementation, the BBS experienced a system crash which was later diagnosed as the result of a bad sector on the hard drive of the host computer. While the system was being repaired, the writer really became aware of the degree to which she checked the last-user screen, the importance of having the whir of the BBS computer as a part of the sound in her study, and the empty space it left on the desk while it was away being fixed.

The Wildcat! BBS software, both the shareware and registered version, have the capability of allowing file uploads by users, storing those uploads, and allowing downloads by registered users. The program provides for users to earn additional online time with the system by uploading files to the system. The writer chose to disable this feature of the software for several reasons. First, the focus of the writer's practicum was the exchange of electronic mail between users, a focus which was defined by the name chosen for the BBS. A second reason to not deal with the uploading of files was related to the issue of virus protection and detection. This concept was not part of the writer's project, nor did the writer have the resources to deal with this significant telecommunications issue. The writer also felt that the focus of the BBS did not include dealing with the legal issues related to appropriate uploads and downloads. Finally, the writer did not have adequate computer literacy skills to solve problems related to uploads and downloads, both in terms of the user and the storage of such data on the host computer.

The outcome that students will exhibit advanced communication skills by sending electronic mail messages was a crucial step in educating students to have access to a hidden world of information and interpersonal relationships. The writer's Girl Scout Cookie order was solicited and placed electronically using the BBS. Additionally, distance education has tremendous potential for transforming learning via telecommunications that finds students "at the threshold of a newly transformed distance education that, with the use of technology, will provide a front door to educational opportunity for all students and their teachers as well" (Edwards, 1992, page 15). The writer feels that The Mailbox provided a positive initial email experience and that appropriate online and off-line support was important.

The second outcome was related to the increase in knowledge related to the use of telecommunications. The booklet prepared by the writer was very positively received. The writer feels that this objective was successfully met with both the written and live demonstrations of the system working together to provide a positive learning experience.

The third outcome was that parents and students would learn about school activities via the BBS. This occurred at a sufficient rate to be considered achievement of the goal but there is much potential for using the BBS to provide information to the community as the IRENE community BBS system does (Jacobs, 1993).

The fourth outcome of the practicum dealt with teachers using the BBS to send and receive messages from students and supplying information to be posted to be received electronically. The participating teachers worked admirably to successfully achieve this goal. The writer strongly feels that computers must be placed into the hands of teachers as a crucial educational priority. The limited number of participating teachers in the implementation of the practicum is felt to be related to the fact that only a small percentage of teachers at this point have access to and/or ownership of computers with modems and telephone lines for telecommunication via computer.

The fifth outcome was related to the fourth, expecting that teachers of fifth and sixth graders would send electronic messages to their students participating in the practicum. Although this outcome was met, it is also tied to issues related to access to computers, modems, and telephone lines. Accomplishment of this outcome is viewed by the writer as an improvement in the educational program. Many teachers voluntarily spend their own money to support their classroom work (Latham and Fifield, 1993). The acquisition of appropriate hardware and software to enable significant involvement in email experiences is seen by the writer as a continuing need for all instructional personnel.

The sixth and final outcome of the practicum involved the establishment of electronic pen pals or participation in networks that were regionally diverse. Funding resources also impacted this outcome and the writer was forced to re-assess the methods planned for accomplishing this outcome in terms of available electronic meeting grounds without cost to students.

As Burrall (1992) states, "Telecommunication is truly the magic of the future" (page 28). The Mailbox BBS served well to introduce students to telecommunication on a local basis. Participation in commercial telecommunication learning opportunities requires funding but offers the opportunity for worldwide telecommunications (Burrall, 1992). Another potential source of "electronic treasures by electronic mail" (Harris, 1992, page 36) is the Internet which is an international information educational network accessible by telecommunications.

The Mailbox BBS was a small step toward the implementation of a community connected by telecommunicating. IRENE is the name of a community BBS in operation since 1991 as a community project of the Education Foundation of Indian River County and the School Board (Jacobs, 1993). The district, via its technology plan, allocated $47,000 for each of 18 schools to purchase and set up workstations. Business partnership support enabled the system to become a reality with 26 386-SX computers with VGA monitors (10 with 40 MB hard drives and 3.5 floppy drives). The server for the network is a 486-33 mzh with a 330 MB hard drive running on a Novell platform. The IRENE component of the system is used by teachers, committee members, students, and parents; students have a school-to-school partnership with an elementary school in Kennebunk, Maine, via the Internet (Jacobs, 1993).

The funding for The Mailbox BBS was provided by the writer who purchased the Wildcat! software as shareware and the registered version, the internal modem, and paid for the installation and monthly service charge for the telephone line used throughout the implementation of the practicum. The computer used to host the BBS was an IBM PS2 Model 25 with a 20 MB hard drive. This computer was donated to the school district by a business that upgraded to newer technology. Older equipment is subject to a higher failure rate and the initial problems the writer had with the formatting of the hard drive and the crash of the system due to bad sectors on the hard drive reflect the use of an older machine with an unknown history of use.

The results of this practicum indicate that the selected solution strategies were successful by achieving the desired and expected outcomes as well as those which were unexpected. The writer was able to implement each component of the solution strategies with adjustments when necessary due to funding, equipment failure, and accessibility. The writer has placed for display in her classroom a quote gleaned from the work of Burrall (1993) which he attributes to 'source unknown:' "Any significantly advanced technology is indistinguishable from magic" (Burrall, 1993, page 28). The implementation of this practicum held that thought.

Recommendations

The writer realizes that this practicum was instrumental in introducing students, parents, and teachers to experiencing telecommunications at a local level. Because of this practicum, email messages were exchanged, computer literacy was enhanced, interpersonal relationships were fostered, thoughts and information shared, and an ongoing forum for the exchange of messages and information was established. The writer will continue to foster increased participation in telecommunication opportunities by students, parents and teachers. The writer also recommends implementation of a district-wide community bulletin board and computer network based on the Indian River School District Model (Jacobs, 1993). The writer recommends that the school district allocate appropriate funds to continue the service of The Mailbox BBS including funding of the telephone line, provision of a 486 DOS-based computer to serve as host with an abundance of MEG in terms of RAM and storage capacity as well as a CD-ROM to reflect current technology and provide students, parents, and teachers with access to an online encyclopedia for research. The writer also recommends that the writer's district consider purchase of the multi-line version of the Wildcat! BBS software and to fund a position to implement, monitor, and provide inservice and orientation to users of the system. The writer wholeheartedly supports the District Superintendent's goal to place a computer in the hands of every classroom teacher as soon as possible, and the writer recommends that modems and software be considered as important elements of the technological package.

It is the writer's recommendation that access to and knowledge about telecommunication opportunities become a part of adopted computer literacy curriculums, such as the grade-level specific computer curriculum developed by the writer (Burmeister, 1992). It is the writer's recommendation that schools on the brink of technological restructuring and school improvement will include goals and objectives and strategies which specifically reflect the access and use of telecommunication as a means to accomplish these goals.

In terms of recommendations to the larger readership of this practicum report, the writer specifically indicates the following as appropriate recommendations for further study in light of this work:

1. Further evaluation related to the impact of participation in electronic mail experiences should be made. These could include the effect upon use of electronic mail upon reading rate and comprehension, the collection of data related to an increased familiarity with the keyboard and typing speed, and the role that participation in electronic mail increases communication between students, teachers, and parents.

2. The telecommunications capability of real-time chat could be implemented in a "type to a teacher" telecommunications program which could supplement existing "Homework Hotlines" presently allowing students to telephone a teacher for auditory help with homework. The implementation of an interactive BBS could facilitate interaction between students and teachers visually.

3. The use of interactive telecommunication using a multi-line BBS system could be investigated for use with visually handicapped students (who can see images presented via a large screen monitor) as well as hearing impaired individuals. The writer recommends that a BBS program be explored for use by homebound students or other persons unable to access information by other means. The writer also sees implementation of an interactive BBS as an effective strategy for serving the needs of the homebound population as well as the needs of students

identified as special needs throughout the spectrum covering remediation through gifted student instruction.

4. The writer recommends that all teachers have access to a telephone line in their classroom, a computer, and a modem. Current efforts to infuse technology into the classrooms focus upon the placement of computers, CD-ROMs, laser disk players, and video capability. The writer firmly believes that the initial technology to place in the hands of the classroom teacher is a private telephone line which the teacher may use in a variety of ways including voice communication as well as email.

5. The writer recommends that appropriate technological school-based support be provided to all persons willing to learn of new technology. The establishment of an easily-accessed local BBS can effectively serve as a communication link to members of a local community and the world. There is great potential for learning beyond the classroom via "hyperlearning" (Perelman, 1992, page 26) and a thorough investigation and support of learning via non-traditional means is seen as a crucial element of school reform and improvement for schools of the next century.

6. The writer would like to see the results of this practicum applied to funding in the writer's state as well as across the nation in terms of meeting national and state goals for school improvement and the America 2000 plan with a telecommunication component. The computers, modems, telephone lines, software, and inservice all require funding in order to become an educational

reality. The writer firmly believes that we can ask for no less.

Dissemination

The writer plans to disseminate the results of the practicum in several ways. These include networking, workshop presentations/ demonstrations, and publication.

Throughout the development and implementation of the practicum, the writer was an active user of several national bulletin board systems (BBS), two of which are specifically affiliated with education. The writer plans to continue discussions on these Boards, specifically her membership in electronic conference areas dealing with technology in the classroom and the use of electronic mail. The writer expects to continue operation of The Mailbox BBS and to continue to welcome registered users and encourage active users to recruit and introduce family and friends to use of The Mailbox BBS.

Dissemination of the writer's work may also be shared by registry with Mustang™ Software when the registered version is installed as a system upgrade.

The writer plans to submit appropriate lesson plans related to the use of telecommunication for future publication. The writer will continue to serve as a free-lance consultant specializing in the use of email. The writer also plans to share copies of the approved report with the District Superintendent, the Director of Grants, Research and Governmental Relations, the District Director of

Instructional Technology, and the District Director of Staff Development.

The writer also anticipates continuation of workshops related to the use of telecommunication throughout the writer's district including a presentation of electronic mail as an authorship forum at an upcoming district Young Author's Conference. The writer plans to submit a presentation of the practicum report at the Second International Symposium on Telecommunications to be held in November, 1993, at the Infomart, Dallas, Texas. The writer will continue to seek other presentation opportunities related to the practicum project, its outcomes, and recommendations.

The writer has received requests for submission of lesson plans related to the use of telecommunication and has offered to include a poster presentation related to this work at the Summer Institute 1993 of Nova University in Washington, D.C. as part of a presentation related to effective poster presentations.

The writer also anticipates the acceptance of this report for inclusion in the ERIC document information retrieval database. The writer will remain alert and receptive to opportunities to share the solution strategies, implementation experiences, and recommendations related to the practicum.

References

Albright, R. G. (1989). Electronic communications for home and office. Pennsylvania: Chilton Book Company.

Beazley, M. R. (1989). Reading for a real reason: Computer pals across the world. Journal of Reading, 32(7), 598-605.

Bouverat, R. W. (1992). Keeping a log or journal. Cluster 41 Practicum Orientation Source Book. Nova University Practicum Office; Dr. M. E. Sapp, Director.

Branstetter, D. G. (1992). 10.5 Million businesses at your fingertips (Ad.). CompuServe Magazine, 11(3), 43.

Buschbaum, H. (1992). Portrait of a staff development program. Electronic Learning, 11(7), 18-27.

Burmeister, M. (1992). The development and implementation of a grade level specific computer literacy curriculum through teacher inservice in an elementary school. Nova University Practicum Report. ED348980.

Burmeister, M. (1992). One computer in the social studies classroom. Computers in the Social Studies, 1(1), 6-8.

Burrall, B. (1992). Telecommunication = motivation. The Computing Teacher, 20(2), 27-28.

Caissy, G. A. (1987). Microcomputers and the classroom teacher. Indiana: Phi Delta Kappa Fastback 261.

Carpenter, C. L. (1992). Plugging in to the information age. The Computing Teacher, 19(7), 38-39.

Caswell, S. A. (1988). E-mail. Canada: Gage Educational Publishing Company.

Crowley, M. L. (1989). Organizing for electronic messaging in the schools. Computing Teacher, 16(7). 23-26.

Dertouzos, M. L. (1991). Communications, computers, and networks. Scientific American, 265(3), 62-69.

Dismuke, D. (1993). Let me out of here! NEA Today, 11(7), 4-5.

Edwards, M. (1992). Interactive distance learning via satellite. Florida ASCD Journal, 9, 15-18.

Ellington, K. (1991). Knowing where to find it. The Computing Teacher, 18(7), 34-36.

Fischer, K. W., & Lazerson, A. (1984). Human development from conception through adolescence. New York: Freeman and Company.

Gookin, D. (1991). DOS for dummies. California: IDG Books Worldwide, Inc.

Gookin, D.. & Rathbone, A. (1992). PCs for dummies. California: IDG Books Worldwide, Inc.

Grunwald, P. (1990). The new generation of information systems. Phi Delta Kappan, 72(2), 113-114.

Harris, J. (1992). Mining the Internet: Electronic treasures by electronic mail. The Computing Teacher, 20 (1), 36-38.

Hirsch, E. D., Jr. (1991). A First Dictionary of Cultural Literacy. Boston: Houghton Mifflin.

Jackson, T. (1992). Stretch your living space. Better Homes and Gardens, 70(3), 86-94.

Jacobs, J. E. (1993). A community telecomputing project. Florida Technology in Education Quarterly, 5(1-2), 123-127.

Kelly, L. E., & Zuckerman, B. M. (1989). Telecommunications: Electronic Mail. Journal of Physical Education, Recreation, and Dance, 60(7), 86-89.

Kurshan, B. (1990). Educational communications connections for the classroom: Part I. The Computing Teacher, 17,(6), 30-35.

Lake, D. (1988). Moving words. English Journal, 77(1), 83-85.

Latham, G. I, & Fifield, K. (1993). The hidden costs of teaching. Educational Leadership, 50(6), 44-45.

Madian, J. (1992). Staff development that makes sense. Electronic Learning, 11(7), 10.

McCade, J. M. (1988). Information technology: Telecomputing. Technology Teacher, 48(2), 12-14.

Naisbitt, J. (1984). Megatrends: Ten new directions transforming our lives. New York: Warner Books.

Norris, D. J. (1990). Improve quantity and quality of student writing through the implementation of telecommunications and process writing activities between fifth and sixth grade students. Nova University Practicum Report. ED324685.

November, A. (1992). Familyware. Electronic Learning, 11(7), 50.

Olsen, J. W. (1992). GEnie emerges from the bottle. Shareware Magazine, 7(4), 16-17, 44-45.

Perelman, L. J. (1992). School's out. New York: Morrow.

Rickelman, R. J., & Henk, W. A. (1990). Telecommunications in the reading classroom. Reading Teacher, 43(6), 418-19.

Shapley, B. (1992). Meeting Florida's goals for education with technology. Innovators & Innovations, 2(1), 3-5.

Smith, R. E. (1985) Computer bulletin boards: New wave in teen communications. Futurist, 19(2), 28-29.

Sullivan, C. (1989). Electronic mail and information empowerment. The impact of computer mediated communications in the Florida state legislature. Paper presented at the Annual Telecommunications Policy Research Conference. ED 318414

Tucker, S. A. (1987). Electronic mail connections. Online, 11(4), 55-62.

Upitis, R. (1990). Real and contrived uses of electronic mail in elementary schools. Computer Education, 15(1-3), 233-243.

Watson, B. (1990). The wired classroom: American education goes on-line. Phi Delta Kappan, 72(2), 109-112.

Weinstein, S., & Roschwalb, S. A. (1990). Is there a role for educators in telecommunication policy? Phi Delta Kappan, 72(2), 115-117.

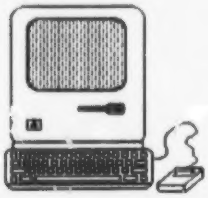
Wigley, G. (1988). Telecommunications planning guide for educators. Computing Teacher, 16(3), 24-29.

Williams, G., & Mitchell, C. (1987). Setting up a library BBS: A step-by-step guide. Wilson Library Bulletin, 61(6), 12-15, 79.

Wishnietsky, D. H. (1991). Using electronic mail in an educational setting. Bloomington, IN.: Phi Delta Kappa Educational Foundation.

APPENDIX A

COMPUTER SURVEY



Wanted: Information about kids and computers!

Do you have a computer at home? Circle one: yes no

Do you have a modem? Circle one: yes no not sure

A modem connects your computer to another computer using a telephone line.

How do you use computer? Check all of the answers that are ways you use the computer (includes using the computer at school):

_____playing games
_____educational drill (math, reading, and learning activities)
_____drawing pictures (graphics)
_____word processing (typing)
_____data base (getting information from files)
_____contacting other computers
_____using bulletin board service
_____other ways (Please tell what they are:)

____

IF YOU HAVE A MODEM, please answer these questions:

Do you use the modem? yes no

Do your parents use the modem? yes no

Please check the services you have for the computer at home:

_____America Online
_____CompuServe
_____Prodigy
_____other: ______________________________

Would you like to send messages to friends using the computer? yes no

Would you like to get messages from friends using the computer? yes no

IF you would like to learn more about using computers, **please tell**:

Name
home address
telephone grade right now:

Thanks for your help!

APPENDIX B

SURVEY COVER LETTER TO TEACHERS

--- --- Blvd.
---------, FL -----

May 26, 1992

Dear Teacher,

As a doctoral student, I am working on a project that I hope will increase electronic mail between students, teachers, and parents who have home computers and modems.

I would really appreciate your help! I need to identify students who have home computers and modems before they disappear for summer vacation.

PLEASE have your children complete the enclosed surveys. Name and address are optional BUT do encourage students with home computers and modems to fill in this information!

It would also be very helpful if you would fill in the pink survey form.

Thank you very much for your help with this during these busy last days. Please use the quarters to have a Coke on me!

Sincerely,

Teacher: ----- Elementary

Please return the surveys via courier in the attached addressed envelope. Thanks!

APPENDIX C

SURVEY DATA TABULATION FORM

Computer Survey Tally Sheet

Computer at home:
YES

NO

Have a modem:
YES

NO

Not Sure

Computer Use:
games

educational drill

drawing pictures

word processing

data base

contacting other computers

using bbs

other ways:

Do you use modem?
YES

NO

Parents use modem:
YES

NO

Online Services:
America Online

CompuServe

Prodigy

Other:

Like to send messages to friends:
YES

NO

Get messages:
YES

NO

Grade now:
4th

5th

APPENDIX D

THANK YOU LETTER TO PRINCIPALS

--- Bay Blvd.
---------, FL -----
June 1, 1992

--------- ----------, Principal
---------- Elementary School
------ Drive
-------, FL ------

Dear Dr. ------,

Thank you very much for assisting with my practicum project by allowing me to distribute surveys to your fourth and fifth grade classes. Time was of the essence and I appreciate your help.

Enclosed is a copy of my approved concept paper for my major practicum at Nova University. This work is equivalent to the doctoral dissertation but is field based. I hope that my work will make a difference for students, parents and teachers as the technology of electronic mail becomes part of our lives.

It is my hope that my work will be useful to you and ---------- Elementary. The electronic bulletin board can be an effective link between home and school. I look forward to sharing my plans and progress with you as the project continues.

Thank you again for your attention to the initial stage of my project. My first practicum developed and implemented a computer literacy curriculum for grades K-5 specifying vocabulary, skills, and knowledge for each grade level. I would be delighted to share this with you.

Sincerely,

APPENDIX E

EMAIL WORKSHOP EVALUATION FORM

EMAIL WORKSHOP EVALUATION FORM

Circle one to rate: 1= high, 2=medium, or 3=low.

1. In terms of updating knowledge or improving skills, how do you rate this workshop overall?	1	2	3
2. In your opinion:			
a. Was the presenter knowledgeable?	1	2	3
b. Was the information presented useful to you?	1	2	3
c. Did this workshop fulfill a need?	1	2	3
d. Was the experience useful to you?	1	2	3
e. Was the information presented:			
new to you?	Yes	No	
not new, but worthy of review?	Yes	No	
f. Would you like to see this workshop expanded or continued?	Yes	No	

Your comments are appreciated.

4. How do you feel that this workshop could be improved?

APPENDIX F

WRITER'S DOCUMENTATION OF EMAIL USE FORM

Writer's Documentation of Email Use Form

Date: ________ ______________

Time: ___________

Number of messages:______

Notes about messages:

Comments:

Action Taken:

APPENDIX G

PRE-PRACTICUM EMAIL SURVEY

Email Survey

Please answer the following questions about your use of your computer and modem.

1. Before using The Mailbox BBS, did you know how to use the modem? Circle: YES NO

2. What three things are needed in order to send or receive email?

____

____

____

3. Please check all of the ways you have made contact with other computers using your modem:

____I have not used the modem (skip to question 4, please).
____sending electronic mail message to a friend
____getting electronic mail messages from a friend
____using Prodigy
____using America Online
____using Compuserve
____using a different bulletin board
____getting information for a report
____other (please tell your use: ____________________________)

3. Have you ever sent email? Circle YES NO

4. What do you think is the best use for your computer when using the modem?

APPENDIX H

POST-PRACTICUM SURVEY

The Mailbox BBS Evaluation Survey

Name of Registered User: __________ __________________________

About how many times did you call The Mailbox BBS? _________

Please tell how often do you logged on to the BBS:
___about every day
___about every other day
___about every week
____once in a while
____ not very often
____ never

Did you learn something from using the BBS? YES NO

If yes, what did you learn?

Did you have problems using the BBS? YES NO

If you had problem(s), please tell about it:

Please check all of the ways you have made contact with other computers using your modem:
_____sending electronic mail message to a friend
_____getting electronic mail messages from a friend
_____using Prodigy
_____using America Online
_____using Compuserve
_____using a different bulletin board
_____getting information for a report
_____other (please tell your use: _____________________________

What do you like about this BBS? ______________________________
What do you NOT like about this BBS? ________________________
What would you like to see added to this BBS? __________________
Do you plan to continue to use the BBS? YES NO

You may write any additional comments on the back of this sheet. Thank you very much for completing this survey! As always, you are welcome to leave a [c]omment for the sysop! :)

APPENDIX I

SURVEY OF PARTICIPATING TEACHERS/ PARENTS

Survey of Participating Teachers

1. I sent email messages to students using the BBS system.

YES NO

2. I received email messages from students using the BBS system.

YES NO

Please respond to the questions below by circling the number that most accurately reflects your opinion.

3. I enjoyed the use of the computer for the purpose of email.

1	2	3	4	5
Strongly Disagree	Somewhat Disagree	No Opinion	Somewhat Agree	Strongly Agree

4. I will not continue to use email as a means of communication.

1	2	3	4	5
Strongly Disagree	Somewhat Disagree	No Opinion	Somewhat Agree	Strongly Agree

5. Electronic communication is useful to the classroom teacher.

1	2	3	4	5
Strongly Disagree	Somewhat Disagree	No Opinion	Somewhat Agree	Strongly Agree

6. Electronic mail should not be a part of the district computer literacy curriculum.

1	2	3	4	5
Strongly Disagree	Somewhat Disagree	No Opinion	Somewhat Agree	Strongly Agree

7. There is little academic value in the use of email.

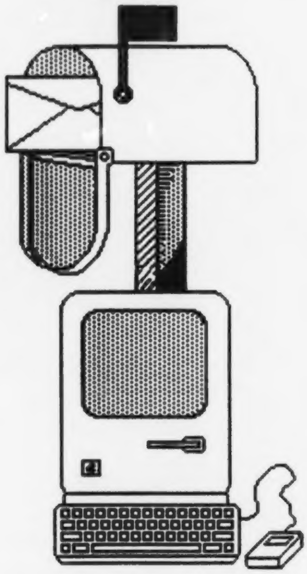
1	2	3	4	5
Strongly Disagree	Somewhat Disagree	No Opinion	Somewhat Agree	Strongly Agree

APPENDIX J

TELECOMMUNICATIONS BOOKLET

Telecommunications Booklet
Page 1:

Electronic Mail Means Telecommunications Fun!



The Mailbox BBS
(000) 000-0000

Sysop:
M. Burmeister, Teacher
Doctoral Student: Nova University

Telecommunications Booklet
Page 1

What is Telecommunication?

Telecommunication is the exchange of information between people via computers. The computers use telephone lines to send and receive information. A modem (**m**odulator/ **d**emodulator) translates typed words into code that can be sent over the telephone line; it also translates coded information into words that can be read on the computer's screen (monitor). Modems work at speeds that are measured in a unit called "baud." Common speeds are 300 baud, 1200 baud, 2400 baud, and 9600 baud. Faster modems are being developed. The higher the baud rate, the faster information can be sent and received. The higher the baud rate, the higher the cost of the modem but also the faster it works. This can be important if the connection is made by a long distance telephone call; local calls or calls made to an 800 number do not add charges to the telephone bill.

Why Use Telecommunication?

Telecommunication is a fun, fast way of sending messages and getting information. Electronic mail (e-mail) is using telecommunication to send and receive messages. A bulletin board system (BBS) is a place (on another computer) where you can leave messages for people, read the messages of others, and get messages (e-mail) from other people. Some BBSs have bulletins or information to read. Some bulletin boards are free and others charge a small fee.

Another use of telecommunication is to access online commercial (paid) computer services. Examples of these are CompuServe, Prodigy, and GEnie. E-mail may also be sent using these systems which charge fees for using the system. Some fees are based on the amount of time you are connected; others charge a monthly fee. It is important to know how you will be charged for these online services.

What Is Needed to Telecommunicate?

In addition to a computer, you will need a modem, telecommunications software, and a telephone line. Some modems come with computer software; other sources of software are getting public domain programs from friends

Telecommunications Booklet
Page 2:

who have copies or who can get legal copies for you from online services, computer catalogs, or software stores. The software lets the computer tell your modem what to do and it is an important part of your set up. Examples of telecommunication programs are Microsoft Works and Smartcom (for Macintosh) and Proterm and AppleWorks TimeOut Telecomm (for Apple II series) and Procomm and the Terminal accessory in Windows (for IBM or IBM-compatible computers).

Because the modem needs to use the telephone line without interruption, lines with 'call waiting' or 'call forwarding' should have this feature disabled while the modem is using the telephone line. The instructions that came with the modem and/or the software should have directions about how to do this.

****

You are invited to use

The Mailbox BBS
computer dial
(000) **000-0000**

The purpose of this BBS is to give 5th and 6th grade students, their parents, and teachers a place to use email to share their thoughts and ideas and to obtain information about school events. If this is a local telephone number for you, there is no cost for using the BBS. Use your telecommunications software to dial the number above. The first time you call, you will be asked to answer some questions that will register you as a Mailbox BBS User. Be sure to choose a password that you will remember; you will need it every time you call! If you have problems or questions, you can leave a message for the Sysop on the BBS [and you will get an e-mailed answer], or you may voice telephone Mrs. Marsha Burmeister at 438-0275. Happy e-mailing to you!

Telecommunications Booklet
Page 3:

Glossary of Telecommunication Terms

access: the ability to send or receive information by way of a computer connection

baud: the rate of speed of the telecommunications in bits per second. Common baud rates are 300, 1200, and 2400.

BBS: bulletin board system

bulletin board system: a small computer network that can be accessed via a computer and a modem for reading and leaving messages

chatting: direct typing back and forth between persons using computers-- like talking on the telephone but the persons are typing

communications settings: the settings in the communications software that establish how two computers will communicate with one another

communication software: the computer program which gives directions to the computer for communication

conferencing: some BBS s have a section where you can email to people with similar interests or on a particular topic

connect time: this is the time you are online from the time you sign on until the minute you sign off or log out.

data: facts and information

database: facts and information stored that can be found by using a computer to search for it

distance learning: electronic transmission of lessons and information over great distances

DOS: disk operating system; the software that controls the most basic functions of an IBM or IBM-compatible computer

download: to receive a complete computer program or document from another computer

e-mail: electronic mail

electronic mail: preparation and sending of messages,documents,or images and the use of electronics to store and forward text messages (like passing notes but done with a computer , modem, and BBS)

facsimile machine (fax machine) a device that sends and receives information over telephone lines. Documents are sent by scanning the pages and converting text and images into digitized signals. The digitized signals are then converted back into the form of the original document when received.

fax: a facsimile machine; also, the document produced by a fax machine

hacker: a term for a person who illegally tries to access and sometimes damage the files on a remote system using telecommunications technology.

hacking: persistent efforts of a person using a computer or terminal to gain illegal or unauthorized entry to another computer system

handshake: the exchange of signals between two computers before they begin communicating. It is a noise you can hear.

Telecommunications Booklet
Page 4:

Hayes: a type of modem which is the industry modem standard; modems may be a different brand but are "Hayes compatible."

host: the computer that you call that is running the BBS or database software

log-on, log-off: the procedure to start and stop communicating with the other computer system

menu: a list of choices of files or activities that are offered to software users.

modem: an acronym for MOdulat-DEModulate. An electrical device that converts digital computer signals to be sent over telephone lines; a second modem at the receiving end reverses the process.

online, off-line: the state of being connected or not connected to another computer to transmit or receive information

password: a computer user's secret word, number, or combination of word and number which is used for security purposes of computer networks

pathname: this is the name you give your data disk

parity: this is a check for transmission errors

P C: personal computer

protocol: a set of rules for communicating between computers. The settings must be the same for the sending and receiving computers.

public domain: a term usually for software that the author lets be copied and distributed for free

shareware: software that is able to be freely copied and distributed BUT users are required to pay for the software IF it is used; the honor system applies

sysop: the system operator, a person in charge of a BBS or other such computer accessible system.

telecommunications: transmission of information from one place to another by electronic means

teleconferencing: an electronic meeting or exchange

upload: to send an entire computer program or document to another computer

user friendly: easy to use computers and/ or software

virus: a hidden, and often destructive, computer program that can infect or spread to other computer systems.

voice: information transmitted in the form of the spoken word. The telephone uses voice transmission.

A Word About Passwords

Your password is a very important possession. You must be able to remember it but other people should not be able to guess it. Your birthday or any part of your real name are NOT good passwords. Choose something special to you (a word, a number, or a combination of the two). You will need at least 6 letters or digits. Do not share it with anyone! It is a good idea to write it down and put it away in case you forget it. If you forget it, you can call the sysop for help. The BBS will not let you online without it!

Telecommunications Booklet
Page 5:

Telecommunications Etiquette

Manners are important. "Etiquette" means "ticket" in French. When you are using e-mail, it is your ticket to using the system without annoying others.

The first rule to remember when using e-mail is that whatever you type [write] will be read by other human beings with feelings. **Therefore, never type anything to anyone that you would not say to them in person, in front of other people.**

Another important electronic mail manner is to **use appropriate conversational language.** Swearing, cursing, or the use of any unacceptable words that are not a part of polite conversation are not tolerated on e-mail systems. Users who choose to type this kind of talk risk losing their access to the BBS.

The written word can be misinterpreted sometimes because we don't have clues such as facial expressions and the tone of voice to help us understand the words. Because the words must stand alone to give us meaning, e-mail writers may need to **be careful using humor or sarcasm**. You may choose to add a clue when using humor or sarcasm. If you type something to be funny, you may wish to help the reader be sure to get the message by typing <grin> or <joke> after a funny statement.

Because e-mail is the result of human beings typing words, mistakes happen. Words can be misspelled or grammar errors can be made. E-mail is designed for quick communication. Therefore, persons who use e-mail **forgive errors in messages**. It is all electronic dust anyway and will be deleted after being read so it is not polite to criticize the errors of others; our turn may be next!

It is also considered SHOUTING to use all capital letters. If someone asks you to "turn down the volume a bit," you are being politely asked to turn off the 'caps lock' key. Do **use capital letters only when necessary.**

Using manners while online will let people know that you are the kind of person with whom they would like to e-mail! Remember to take turns-- some boards, like The Mailbox, only have one telephone line! Make your time count!

Telecommunications Booklet
Page 6:

E-mail Shorthand

As electronic mail has become more and more popular, a type of keyboard shorthand has developed. You may see some of these messages in your electronic mail--or include them in your messages online!

Tip your head sideways to the left to see these shorthand symbolic smiley faces:

:) = smile
;) =wink
:(=frown
d:) =smiley face wearing a ball cap
:D =laughing
:-0 =yelling
:* =kiss
:X =my lips are sealed

ttyl =type to you later
LOL =laughing out loud
OTF =on the floor laughing

Enjoy using this shorthand and adding others as you and your friends use the computer to communicate!

Your First Log-In

The first time you call The Mailbox you will be asked some questions. The information you give will register you as a user of the system. Please answer the questions carefully and truthfully. You will also choose your password and register that with the system. You will enter it two times; the second time you will not see the password; this is a part of system security. You will not see your password when you type it on future use of The Mailbox. It really is your secret! The next time you call you will be welcomed as a registered user of the BBS!

When asked about color graphics, answer N for No.
When asked to choose protocols, choose E
When asked about HotKeys, choose N for No.

Making these above choices will make your visit to The Mailbox easy and understandable. Other choices may mean that you will see all sorts of 'hash' on your screen. If this happens, you will need to telephone the sysop.

Telecommunications Booklet
Page 7:

Telecommunication Notes

Use this space to write down names of online friends or things you learned online! Thanks for using telecommunications-- and The Mailbox BBS!

APPENDIX K

CONTENT OUTLINE OF EMAIL WORKSHOP

Content Outline of Email Workshop

Group Survey
- used a modem
- have a FIRN account
- use FIRN account
- have home computer and modem
- member of an online service

Introduction: Terminology
- modem = modulate/ demodulate
- baud = speed. 300, 1200, 2400, 9600 +
- Hayes compatible
- BBS
- online services: Prodigy CompuServe America Online
- networks: BITNET, INTERNET, TYMNET
- electronic addresses
- password :) d:) ;)
- ttyl SHOUTING handshake

II. Hardware
- any computer
- Hayes compatible modem (industry standard)
- phone line

III. Software
- makes a difference
- bundled with modems
- good and bad:
- MacKnowledge, Red Ryder experience
- Recommended: SmartCom, Microphone II, White Knight
  - features: ease of operation, visuals, fast type, printing
- terminal emulation FIRN = VT 100 for FIRN

IV. Demonstration:
- NEA -- BBS
  - members only
  - nice menu
- FIRN -- info in program
- LUIS -- not for email but another example of use of telecom

V. Discussion of Resources
- Catalogs:
  - MacWarehouse, MacConnection, Resource Central

APPENDIX L

BBS MENUS

```
MAIN MENU:
  [M]............Message  Menu          [F]..............Files  Menu
  [C]....Comments  to the SYSOP         [B]...........Bulletin  Menu
  [P]..........Page  the SYSOP          [I]...Initial  Welcome Screen
  [Q]...........Questionnaire           [V]...........Verify  a User
  [Y]...........Your  Settings          [S].......System  Statistics
  [U]............Userlog  List          [N]..............Newsletter
  [G].......Goodbye  & Log-Off          [H]..............Help  Level
  [?]............Command  Help
```

```
MESSAGE MENU:
  [Q]....Quit  to the Main Menu         [U]..Update  Folders for Mail
  [R]...........Read  Messages          [S]...........Scan  Messages
  [E].........Enter  a Message          [D]........Delete  a Message
  [T].............Text  Search          [C].....Check  Personal Mail
  [G].......Goodbye  & Log-Off          [H]..............Help  Level
  [?]............Command  Help          [F]............FILE  SECTION
```

APPENDIX M
BBS WELCOME SCREEN

```
              IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;
          DDDD6                   Welcome to                   GDDDD
          DDDD6         T H E   M A I L B O X   B B S !        GDDDD
              HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<

                     This BBS is Provided as a Service To
              5th and 6th Grade Students, Their Parents and Teachers
                         of Escambia County, Florida

                                    Sysop:
                       Marsha L. Burmeister, M.A., M.Ed.

      *     *     * * * * *    *            *            * * * * *    *
      *     *     *            *            *            *       *    *
      *     *     *            *            *            *       *    *
      * * * *     * * *        *            *            *       *    *
      *     *     *            *            *            *       *    *
      *     *     *            *            *            *       *
      *     *     * * * * *    * * * * *    * * * * *    * * * * *    *

No bulletins have been updated since your last call.

Would you like to view the Bulletin Menu? [y/n]
```

APPENDIX N
BBS BULLETIN MENU

```
IMMMMMMMMMMMMMMMMMMMMM5 WILDCAT!  Bulletin  Menu FMMMMMMMMMMMMMMMMMMMMMMMMMM;
:                                                                           :
: 1 - Escambia County School District Grading Scale Grades 3 - 5.           :
:                                                                           :
: 2 - Escambia County School District Calendar 1992 - 93                    :
:                                                                           :
: 3 - Riddle Time!

: 4 - Daffy Definitions!
:                                                                           :
HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<
```

APPENDIX O
CONTENTS OF 'QUOTE OF THE DAY' FILE

The "Quote of the Day" file presented one of the following quotes to each user as they logged on to the system. The system accepted text of any length; typing two returns (leaving a space between quotations) indicated the text to be displayed to each user. The Wildcat! Quotes.BBS file automatically advanced to the next quote. Duplication of items was intentional.

We must find ways other than violence to solve our problems!

Let there be peace on earth -- and let it begin with us!

Where there is a will there is a way.

What will be, will be (in English)
Lo que sera', sera' (in Spanish)
Che sara', sara' (in Italian)

There is no place like home.

Asked, "Who is the rich man?"
Epiceitus replied, "He who is content."

You can lead a horse to water;
get him to float on his back and you've got something!

Actions speak louder than words.

Everything is easy-- when you know how!

All's well that ends well.

The best-laid plans of mice and men oft go awry.

Do unto others as you would have them do unto you.

We must find ways other than violence to solve our problems!

Don't cry over spilt milk!

The early bird catches the worm.

A fool and his money are soon parted.

A friend in need is a friend indeed.

Great oaks from little acorns grow.

Haste makes waste.

He who laughs last, laughs best.

We must find ways other than violence to solve our problems!

Hitch your wagon to a star!

Look before you leap!

Live and learn!

Live and let live!

The more the merrier!

We must find ways other than violence to solve our problems.

Never put off until tomorrow what you can do today.

An ounce of prevention is worth a pound of cure.

A penny saved is a penny earned.

A picture is worth a thousand words.

Rome wasn't built in a day.

A stitch in time saves nine.

Time heals all wounds.

Let there be peace on earth -- and let it begin with us!!

We must find ways other than violence to solve our problems!

APPENDIX P
HOLIDAY BBS BULLETIN EXAMPLE

Happy Thanksgiving
from the Mailbox BBS!

Best wishes for a happy, laughter-filled holiday! Perhaps these jokes will give you a laugh or two. You are invited to share your favorites using e-mail. Leave them as a message [e]ntered to [a]ll.

What's purple and covered with feathers?
--a turkey holding its breath
What has fur on the outside and feathers on the inside?
--a turkey in a fur coat
What is the key to a good Thanksgiving Day dinner?
--a tur-KEY
What do you get if you cross a turkey with a porcupine?
--splinters in your drumsticks
Why are the Pilgrims burried in Massachusetts?
--because they are dead
What do you get when you cross a canary with a turkey?
--a peeping tom
What did one baby ear of corn say to the other?
--Where's the Pop corn?
Why was Tom Turkey thrown out of school?
--he used foul [fowl] language
What would you call a pet squash?
--call it anything you want; it won't hear you!
What gobbles, has feathers, and & 8 wheels?
--a turkey on roller skates
What is the best way to keep a turkey from charging?
--take away its credit cards
When the Pilgrims landed, where did they stand?
--on their feet
Why did the farmer put suntan lotion on his turkey?
--he liked dark meat
Which side is the left side of a pumpkin pie?
--the side you haven't eaten yet
What has one feather, two eyes, and 3 ears?
--an Indian eating sweet corn
Why did the Indian whisper?
--the corn had ears

Happy Thanksgiving to you and yours!

APPENDIX Q
OFF LINE BBS USER REGISTRATION FORM

The Mailbox BBS
Off-Line Registration Sheet

Thank you very much for your interest in The Mailbox BBS. This electronic bulletin board system is provided as a service to the fifth and sixth grade students and their parents, teachers and administrators of Escambia County Florida.

Please fill out the information requested below. Within 24 hours of my receipt of this form, you will be a registered user of The Mailbox BBS. Happy email to you!

Marsha Burmeister
Sysop [system operator]

Name (as you will log on, include first and last):

____________________ ______________________

From (name of school): ______________________________
Home telephone: ______________________
Birthdate (month/date/year) __________________________
Home Address (optional): ___________________________

Computer type: ______________________

A password is a confidential word, number, or a combination of both that you can remember easily. This is your key to using the system and only you and the Sysop should know it. Birthdates, first names, or other things that are easy to guess are not good passwords.

Password: __________________

Please check all that apply:

____ student
____ parent
____ teacher
____ administrator
____ other: ____________________________

I __have __have not received a copy of the "Telecommunications is Fun" booklet

Please Return to

M. Burmeister, - - B - - Blvd., - - - - - - - - -, - - 00000 or
c/o -.-. - - - - - Elementary School Courier A-2

APPENDIX R

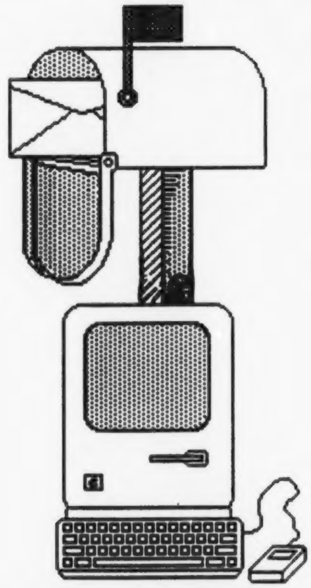
BBS ADVERTISEMENT FLYER

You are invited to use

The Mailbox BBS

An Electronic Bulletin Board Service (BBS).
Use your computer and modem to dial

(000) 000-0000



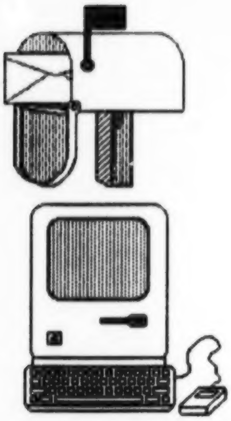
A Free Service

Bringing Telecommunication to Fifth & Sixth Grade Students, Parents, and Teachers of ------ County, -------

System Operator (Sysop):
M. Burmeister, Teacher
Doctoral Student: Nova University
For assistance or questions, please voice telephone 000-0000

APPENDIX S

BBS ADVERTISEMENT FLYER COVER LETTER



-- ----- Elementary School
---- East -------- Street
- - - - - - - - - -, - - - - - - -

Greetings!

The enclosed flyer and booklet are about a project that I am doing to introduce and increase the use of electronic mail (email) between fifth and sixth grade students, their parents, and teachers.

The Mailbox BBS is a user-friendly bulletin board system (BBS) that is open to all persons for the purpose of passing electronic notes without charge. I would also like to post information about your school including calendar items and news using the "bulletin" feature of the BBS.

Please post and/or duplicate the enclosed flyer at your school. The Mailbox BBS is online 24 hours every day except during thunderstorms. New users can register online or, if teachers have groups of students to be registered, a list of names with their chosen passwords may be sent to me via email on The Mailbox or via the school courier system at ----- Elementary. I will gladly supply more copies of the booklets upon request.

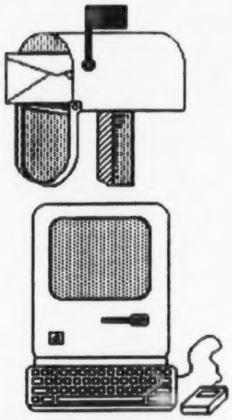
Thank you very much for your help with this project. I hope that you enjoy using the system and that I get to "see you around the email." In the 'old days,' we'd meet by the water cooler!

Sincerely,

Marsha Burmeister
Teacher

APPENDIX T

EVALUATION SURVEY COVER LETTER



The Mailbox BBS
Telephone - - - - - - -
M. Burmeister, Sysop

Dear

Thank you very much for being a registered user of The Mailbox BBS. The Mailbox has been running for several months. At this time, there are 96 registered users and more are always welcome! A copy of the user list is enclosed for your use on the system.

Please complete the enclosed survey and return it in the envelope provided. Your comments are appreciated!

Looking forward to seeing you around the email, I remain

Sincerely yours,

Marsha Burmeister, Teacher
Sysop:The Mailbox BBS

APPENDIX U

BBS USER LIST

BBS User List

Name of Registered User	Computer type	Last Called	From

APPENDIX V

NEA INFORMATION REQUEST POSTING

NEA TEACHER-MEMBER HELP WANTED

By tradition, the school classroon is an isolated entity. Even in most restructured schools, the classroom concept stands.

NEA Today, the publication of the National Education Association, is preparing a story about NEA teacher-members who have broken out of this isolation.

Are you an NEA member who's tapping community resources and experts to find new ways to present material to students? Have you and your colleagues worked to find solutions to classroom isolation? Are you communicating with one another, sharing ideas, seeking solutions to common problems?

If so, please send a message online to NEA11PD, or EdPTom, by Monday, January 4, 1993. Give us your name, the names of your local association and school, the subject or grade you teach, your school and home phone numbers, and a brief description of what you're doing. NEA Today will contact you for more details.

APPENDIX W

ARTICLE PUBLISHED RE: BBS, TELEPHONE LINE

Dismuke, D. (1993). Let me out of here! NEA Today, 11(7), 4-5.

In Pensacola, Florida, fifth grade teacher Marsha Burmeister brings together teachers, parents, and students at Suter Elementary through an electronic information bulletin board she runs from her home. Besides school information, Burmeister posts book reviews and items of interest to other teachers.

Inside her classroom, Burmeister has other means of reaching beyond her classroom walls. Through grants and donations from parents and other teachers, she's been able to purchase a classroom telephone line and computer modem, too. The phone is primarily for parent-teacher communication: an answering machine gives the day's homework assignment and lets parents leave messages without disturbing instruction. After school hours, the line is used for a homework hotline.

But the phone has other uses. If a math problem involves the cost of a bicycle, for instance, and a student thinks the price is unrealistic, the class can call a bicycle shop to check for actual bike prices. If a student gets sick in class, Burmeister doesn't have to leave the youngster to call a parent.

"It reassures the kids to know that their parents are at the other end of the phone on my desk," she says. "And I like the idea that the parents are there if I have a discipline problem."